UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

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| IN RE APACHE CORP. SECURITIES LITIGATION | Case No. 4:21-cv-00575<br>District Judge George C. Hanks, Jr.<br>Magistrate Judge Andrew M. Edison<br>CLASS ACTION |

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DIRECT TESTIMONY OF ZACHARY NYE, PH.D.

November 29, 2023

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# TABLE OF CONTENTS[1]



[1] This Table of Contents, as well as the headings herein, are provided for convenience.

EXAMINATION BY

Mr. Whitman:

## I. QUALIFICATIONS & PROFFER

Q. Dr. Nye, we have marked as **Exhibit 1** a copy of your CV dated November 29, 2023, do you have that?

A. Yes. Thank you.

Q. Is the copy of your CV marked as **Exhibit 1** complete and accurate to the best of your knowledge?

A. Yes, it is.

Q. Can you briefly describe your education?

A. Sure. I received my undergraduate degree in quantitative economics from Princeton. Following that, I received a Master of Science degree in financial economics from the London Business School. And, after that, I received my Ph.D. in financial economics from the University of California at Irvine.

Q. Where are you currently employed?

A. Currently, I'm a Vice President at Stanford Consulting Group, where I've been employed full-time since 2009.

Q. What is Stanford Consulting Group?

A. We are a group of financial economists that primarily provide consulting services, research, analysis, and expert testimony in litigation matters.

Q. In your current capacity at Stanford Consulting Group, what are your areas of expertise?

A. As a financial economist, my primary area of expertise is in the science of valuation, which addresses, in general, how much things are worth.

Q. What year did you begin offering expert opinions in litigation matters?

A. I have been offering expert opinions in litigation matters since 2012.

Q. Have you offered expert opinions in litigation alleging claims under the federal securities laws?

A. Yes, many times. A number of those cases are identified on my CV, which you marked as **Exhibit 1**.

Q. In approximately how many cases involving claims under the federal securities laws have you offered expert opinions?

A. Approximately 62 cases.

Q. In approximately how many cases involving claims under the federal securities laws have you testified at deposition?

A. Approximately 44 cases.

Q. In this case against Apache in which you are testifying today, were you deposed?

A. Yes. I was deposed in this case on November 8, 2023.

Q. Have you had the opportunity to review a transcript of the deposition testimony that you gave in this case on November 8, 2023?

A. Yes, I have reviewed my November 8, 2023 deposition testimony in this case.

Q. Based upon your review of the deposition testimony that you gave in this case on November 8, 2023, do you stand behind the testimony that you provided?

A. Yes, I stand behind my November 8, 2023 deposition testimony. I have, however, completed an Errata sheet that records certain mistakes that I believe were made in recording my testimony.

Q. Dr. Nye, we are marking as **Exhibit 2** a copy of a document entitled "Errata Sheet – November 8, 2023 Deposition Testimony of Zachary Nye Ph.D.," do you have that?

A. Yes. I have it.

Q. Is **Exhibit 2** a copy of the Errata sheet that you referenced in a prior answer?

A. Yes, it is.

Q. Does this Errata sheet record all of the corrections that you believe should be made to your November 8, 2023 deposition testimony in this case?

A. Yes. As of today, I believe that **Exhibit 2** accurately records all of the corrections that should be made to my November 8, 2023 deposition testimony in this case.

Q. Turning back to your experience more broadly – in approximately how many cases involving claims under the federal securities laws have you testified at an evidentiary hearing?

A. I have testified at an evidentiary hearing in each of the following cases involving claims under the federal securities laws, which are identified on my CV: *Halman Aldubi Provident and Pension Funds Ltd., et al. v. Teva Pharmaceuticals Industries Limited, et al.*, Case No. 2:20-cv-04660-KSM (E.D. Pa.); *Barbara Strougo, Individually and on Behalf of All Others Similarly Situated v. Barclays PLC, et al.*, Case No. 14-cv-5797 (SAS) (S.D.N.Y.); *Miriam Edwards v. McDermott International, Inc., et al.*, Case No. 18-cv-04330 (S.D. Tex.).

Q. In approximately how many cases have you testified at trial?

A. I have testified at four trials.

Q. Of the cases in which you have offered expert opinions under the federal securities laws, in approximately how many did you offer opinions in connection with a motion for class certification?

A. Of the cases listed on my CV in which I offered an expert opinion, approximately 41 are cases involving claims under the federal securities laws in which I offered an opinion in connection with a motion for class certification.

Q. Have you ever offered an opinion in a litigation matter that a Court has excluded in whole or in part?

A. No, I have never had an opinion excluded in whole or in part. In the *Ocwen* case, the Court excluded from trial one of seven alleged corrective disclosures. There, the Court determined that one of the alleged corrective disclosures was not corrective as a matter of law, and precluded testimony as to that one excluded alleged corrective disclosure.

Q. Has a court ever precluded you from testifying?

A. No.

Q. Your Honor, Plaintiffs respectfully proffer Dr. Nye as an expert financial economist to testify concerning the market for Apache common stock, an appropriate damages methodology in this case, and the price impact of the alleged misstatements.

## II. NYE INITIAL REPORT

Q. Dr. Nye, we've marked as **Exhibit 3**, a document entitled "Expert Report of Zachary Nye, Ph.D.," dated April 7, 2023, do you have that?

A. Yes. Thank you.

Q. If you turn to page 40 of **Exhibit 3**, is that your signature?

A. Yes. It is.

Q. Does **Exhibit 3** appear to be a true and correct copy of a report that you signed in this case on April 7, 2023?

A. Yes. It does.

Q. Going forward, if I refer to your report marked as **Exhibit 3** as your "Initial Report," will you understand what I'm referencing?

A. Yes. I will.

Q. Dr. Nye, who retained you in connection with your Initial Report?

A. I was retained by counsel for the Plaintiffs in this matter, Kessler Topaz and Saxena White.

Q. Broadly speaking, what do you understand Plaintiffs are alleging in this case?

A. In broad terms, Plaintiffs allege that during the period from September 7, 2016 through March 13, 2020, which is the Class Period in this case, Defendants made materially false or misleading statements pertaining to a putative resource play in the Permian Basin in Texas, which they called Alpine High. Plaintiffs allege that Defendants' materially false or misleading statements created and maintained artificial inflation in the price of Apache common stock during the Class Period, and that such artificial inflation was gradually removed when the price of Apache common stock declined in response to five alleged corrective disclosures made during the Class Period that related to the alleged materially false or misleading statements that were also made during the Class Period.

Q. On what subjects do Plaintiffs allege Defendants made materially false or misleading statements?

A. Defendants' alleged misstatements are all ways in which Defendants represented to the public that Alpine High was an extraordinarily valuable asset, and generally entailed: (1) claims that Alpine High was a world class resource play; (2) statements concerning the economically recoverable quantities of oil, gas, and wet gas at Alpine High; (3) statements concerning the number of economic drilling locations at Alpine High, including in particular geologic formations; (4) representations that Alpine High would drive shareholder value for many years; (5) statements concerning the free cash flow that Alpine High would purportedly generate; and (6) representations that Alpine High would perform well and be economic even in a very low commodity price environment.

Q. Where did you gain your understanding of Plaintiffs' allegations in this case?

A. My understanding of Plaintiffs' allegations is based primarily upon my review of the operative complaint, which I'll just refer to as the "Complaint" going forward, and the Court's decision on Defendants' motion to dismiss the Complaint, as well as my work in this matter to date.

Q. In general terms, what was the assignment given to you in connection with your Initial Report?

A. For my Initial Report, I was asked to opine on whether the market for Apache common stock was efficient during the Class Period. I was also asked to opine on whether damages for Plaintiffs' claims under Section 10(b) of the Securities Exchange Act of 1934 and Rule 10b-5 promulgated thereunder by the SEC can be calculated using a method that is common to all Class members and in a manner that is consistent with Plaintiff's theory of liability.

Q. Do you express opinions on those issues in your Initial Report?

A. Yes. I do.

Q. What specific opinions do you offer in your Initial Report?

A. Based upon my economic analyses, I opine in my Initial Report that the market for Apache common stock was efficient during the Class Period. I also opine in my Initial Report that damages, if any, under Section 10(b) of the Exchange Act for investors who purchased or otherwise acquired Apache common stock during the Class Period, can be calculated using a methodology that is common to all members of the Class and in a manner that is consistent with Plaintiffs' theory of liability.

Q. Are you aware that Defendants' counsel retained an expert to evaluate the opinions you express in your Initial Report?

A. Yes. I am aware that Defendants' counsel retained Ms. Lucy Allen to respond to

the opinions that I express in my Initial Report.

Q. To your knowledge, did Ms. Allen issue a report in this case that responds to your Initial Report?

A. Yes. Ms. Allen issued a report in this matter on June 16, 2023 that purports to respond to the opinions I express in my Initial Report.

Q. Dr. Nye, we've marked as **Exhibit 4**, a copy of a document entitled "Expert Report of Lucy P. Allen," dated June 16, 2023, do you have that?

A. Yes. I have that. Thanks.

Q. Are you familiar with **Exhibit 4**?

A. Yes. I am familiar with Ms. Allen's June 16, 2023 report in this case.

Q. Going forward, if I refer to **Exhibit 4** as the "Allen Report," will you understand what I'm referencing?

A. Yes. I will.

Q. In the Allen Report, does Ms. Allen challenge any of the affirmative opinions you expressed in your Initial Report?

A. No. Ms. Allen challenges neither my opinion that Apache common stock traded in an efficient market during the Class Period nor my opinion that damages for Class members in this case can be calculated using a methodology that is common to all members of the Class in a manner that is consistent with Plaintiffs' theory of liability.

## A. <u>Market Efficiency Opinion and Presumption of Reliance</u>

Q. Dr. Nye, what is an efficient market?

A. For the purposes of a securities litigation like this one, economists and courts usually think of an efficient market as one that satisfies the conditions of a semi-strong form efficient market, which is one in which the market prices for securities incorporate all publicly

available information.

Q. In an efficient market, how quickly is new, value-relevant information incorporated into the price of a security?

A. As reflected in paragraph 18 of my Initial Report, it is my understanding from the Supreme Court's 2014 decision in *Halliburton II*, that the Supreme Court has not endorsed any particular theory of how quickly or completely publicly available information must be reflected in the market price of a security in connection with determining whether a market for a given security is efficient. That said, if a security price responds relatively quickly to the release of new, value-relevant information, that price response will support a conclusion that the market for the security is efficient. The promptness of the price response to new, value-relevant information, and when the security price fully reflects such information, can vary based upon a number of factors, including the complexity and timing of the information and whether any potentially confounding information is released at or about the same time.

Q. Are there circumstances in which it may take several days for new, value-relevant information to be incorporated into the price of a security that trades in an efficient market?

A. Yes. It is documented in the literature, and I discuss measuring a multi-day price response of a security to new, value-relevant information in Section XI of my Reply Report. Among other things, the literature recognizes that when new, value-relevant information is complex, such informational uncertainty often affects the pattern of price responses. In such circumstances, different investors possessing the same information can come to different conclusions, and the security price will take time adjusting to that mix of information and investors' views about it.

Q. With regard to your opinion in your Initial Report that Apache common stock traded in an efficient market during the Class Period, what factors did you evaluate?

A. As is now fairly standard in examining whether the subject security in a class action pursuing claims under the federal securities laws traded in an efficient market during a specified time period, I examined the five *Cammer* factors, identified in paragraph 19 of my Initial Report as well as the three additional *Krogman* factors identified in paragraph 20 of my Initial Report.

Q. Upon what basis, if any, do you believe the factors that you just identified are appropriate for determining whether a security trades in an efficient market during a particular time period?

A. It's my understanding that courts most commonly evaluate market efficiency based upon expert analyses of the *Cammer* and *Krogman* factors, and this is consistent with my experience as a testifying expert in securities litigation matters over the past eleven years.

Q. Did the market for Apache common stock during the Class Period satisfy each of the market efficiency factors that you evaluated?

A. Yes. During the Class Period, the market for Apache common stock satisfied each of the *Cammer* and *Krogman* factors, as I set forth in paragraphs 28 through 64 of my Initial Report. As I noted previously, Ms. Allen does not contest any aspect of my analysis that Apache common stock traded in an efficient market during the Class Period.

Q. Can you please describe the test that you conducted to determine whether Apache common stock reacted to new, value-relevant information during the Class Period?

A. Sure. As I describe in my Initial Report, particularly in Appendix A, I performed an event study on Apache common stock to determine whether new, value-relevant corporate events or financial releases promptly caused a measurable stock price reaction after accounting for contemporaneous market and industry effects.

The event study that I conducted depends upon my regression analyses, pursuant

to which I sought to isolate the Company-specific effects that influenced the price of Apache common stock during the Class Period. Specifically, I performed regression analyses to measure the relationship between Apache common stock returns and (1) changes in market-wide factors that would be expected to impact all stocks; and (2) changes in industry-wide factors that would be expected to impact stocks like Apache in the Exploration and Production, or E&P, industry.

The event dates that I selected to examine are the dates during the Class Period upon which Apache released quarterly or year-end financial results and financial guidance. These earnings-related announcements comprise an objective set of events to examine, as academic literature recognizes. During the Class Period, there were fourteen such dates for Apache, which I discuss in Exhibit 12 to my Initial Report.

Q. Can you please describe the role of the Industry Index in the event study that you conducted to evaluate whether the market for Apache common stock was efficient during the Class Period?

A. Yes. My regression analyses conducted in connection with my Initial Report measure, among other things, the relationship between Apache common stock returns and changes in industry-wide factors that would be expected to impact all stocks in Apache's particular industry. An industry index, like the one I used here, helps differentiate the returns in Apache common stock attributable to Apache-specific news from any portion of Apache's common stock returns that may reflect the impact of information affecting the E&P industry as a whole on a given day.

Q. How did you go about selecting the Industry Index that you used in the event study that you conducted to evaluate whether the market for Apache common stock was efficient during the Class Period?

A. I selected the S&P 500 Oil & Gas Exploration and Production Index, excluding

Apache, after considering: (1) companies identified as Apache's industry competitors in analyst reports published during the Class Period; (2) companies identified by the Bloomberg Industry Classification System as operating in the E&P industry; and (3) companies that Apache identified as its peers in Apache's SEC filings during the Class Period.

Q. In your opinion, were the companies included in the Industry Index that you used for the event study you conducted for your Initial Report peers of Apache during the Class Period?

A. Yes. Based upon the information that I considered before selecting the S&P 500 Oil & Gas Exploration and Production Index as the industry index, I believe that the companies within that index, other than Apache, which I excluded from this index when conducting my regression, were peers of Apache during the Class Period.

Q. What were the results of the test that you conducted to determine whether Apache common stock reacted to new, value-relevant information during the Class Period?

A. The results of the event study that I conducted to determine whether there was a cause-and-effect relationship between Apache's common stock price and the release of new, Apache-specific value-relevant information are set forth in paragraphs 57-60 of my Initial Report. In short, of the fourteen dates that I examined, nine, or 64%, are associated with statistically significant Apache-specific returns at the 95% confidence level. Seven of these nine days are statistically significant negative returns, and the other two days are statistically significant positive returns.

Because one would expect to observe statistically significant abnormal returns at the 95% confidence level only 5% of the time, for a random sample of fourteen days, only 0.7 of such days would be expected to be accompanied by a statistically significant return at or above the 95% confidence level. As my test found twelve times as many statistically significant days

as one would expect to observe from a random sample of fourteen days, my analysis confirms that Apache's common stock price reflected information disclosed to the market and promptly digested the disclosure of new, unexpected, value-relevant information. This supports a conclusion that the market for Apache common stock was efficient during the Class Period.

Q. What, if any, conclusion did you reach after reviewing the results of the test that you conducted to determine whether Apache common stock reacted to new, value-relevant information during the Class Period?

A. I determined that those results were consistent with a conclusion that Apache common stock traded in an efficient market during the Class Period. I note, however, that the results of my event study are just one of the factors I considered in reaching my opinion, and that all of the additional market efficiency factors that I tested also support a conclusion that Apache common stock traded in an efficient market during the Class Period.

Q. Are you familiar with the fraud-on-the-market presumption of reliance?

A. Yes. I am.

Q. What role, if any, does the fraud-on-the-market presumption of reliance play at the class certification stage of a case alleging fraud claims under the federal securities laws?

A. My understanding is that if plaintiffs in a class action are able to invoke the fraud-on-the-market presumption of reliance, they can demonstrate that reliance is an issue common to the class, which will support granting class certification.

Q. Can the fraud-on-the-market presumption of reliance be rebutted?

A. I understand that the fraud-on-the-market presumption can be rebutted.

Q. To your understanding, how can the fraud-on-the-market presumption of reliance be rebutted?

A. I understand that the fraud-on-the-market presumption of reliance can be rebutted

by evidence that severs the link between the alleged misstatements and the price that plaintiffs paid for the security at issue.

Q. In the context of evaluating the fraud-on-the-market presumption of reliance, what is "price impact"?

A. In the context of efforts to rebut the fraud-on-the-market presumption of reliance, I understand price impact to be evidence that the alleged misstatements in a securities class action impacted, or inflated, the price of the security in question. In this context, however, I am not aware of a uniform definition of the amount of price impact required to demonstrate actual price impact. For example, while Ms. Allen insists that a price response that is statistically significant even a fraction of a percentage point below the 95% confidence level cannot be evidence of price impact, I understand that numerous courts and economists disagree with that position.

Q. What is "front-end" price impact?

A. So-called "front-end" price impact exists when the alleged misrepresentation affects the price of a security at the time that the alleged misrepresentation is made. For example, in this case, both Ms. Allen and I have observed that Apache's September 7, 2016 announcement of Alpine High was associated with three days of statistically significant price increases above the 95% confidence level on September 7, 8, and 9, 2016. This is positive front-end price impact. I note, however, that if one is considering an alleged omission of material fact, one would not expect to see front-end price impact, as the market cannot react to information that is concealed at the time a public statement is made.

Q. How does one determine whether the alleged misstatements in a case alleging claims under the federal securities laws had front-end impact on the price of the security at issue?

A. As here, one can specify a regression model and then include the dates of alleged

misrepresentation as the events to consider in a corresponding event study.

Q. What is back-end price impact?

A. So-called "back-end" price impact typically exists when one observes a decline in the price of the subject security when a corrective disclosure is made that relates to an earlier misstatement.

Q. What are corrective disclosures in a case alleging claims under the federal securities laws?

A. Corrective disclosures in such a case are typically one or more releases of new, value-relevant information that relate to earlier alleged misrepresentations. In this context, a plaintiff typically points to a price decline that accompanies an alleged corrective disclosure to claim that that price decline correlates in whole or in part to inflation in the price of a security that the earlier misstatements caused or maintained.

Q. To your understanding, when, if at all, is it appropriate to examine a security's price movement in response to alleged corrective disclosures to determine whether the alleged misstatements had price impact?

A. My understanding is that one seeking to rebut the fraud-on-the market presumption of reliance must disprove that the alleged misstatements had both front-end and back-end price impact. So, in that regard, it's not only appropriate, but also required.

Q. Are there circumstances in which the alleged corrective disclosures are the only source of information to determine whether the alleged misstatements had price impact?

A. Sure. In a pure price maintenance case, where no alleged misstatement caused a positive front-end price impact, it is my understanding that one can only disprove price impact by demonstrating that no portion of the price decline associated with each and every alleged corrective disclosure resulted from the disclosure of information related to the alleged

misstatements.

Q. In your Initial Report, did you conduct any analyses to determine whether the alleged misstatements impacted the price of Apache common stock during the Class Period?

A. No, I did not. That said, the results of the regression analyses that I conducted in connection with rendering my unchallenged opinion that the market for Apache common stock was efficient during the Class Period include my calculations of the abnormal returns in Apache common stock for each day of the Class Period, which includes the dates of the alleged misstatements as well as the dates of the alleged corrective disclosures. These results are set forth in Exhibit 11B to my Initial Report. Again, Ms. Allen does not challenge the results of my regression analysis, including for any of the dates of the alleged misstatements or corrective disclosures.

**B. <u>Damages Methodology Opinion</u>**

Q. In your Initial Report, do you also offer an opinion addressing a methodology for calculating damages that could be applied in this case?

A. Yes. I do.

Q. What damages calculation methodology did you conclude could be applied in this case?

A. The general economic framework for calculating damages that I opine in my Initial Report can be applied for all Class members in this case is most commonly referred to as the "out-of-pocket" measure of damages.

Q. Generally speaking, how does one apply the methodology that, in your opinion, would be appropriate for calculating damages for all Class members in this case?

A. I discuss this in paragraphs 66 through 69 of my Initial Report. In broad terms, however, the theory of liability in this case, like most cases alleging claims under Section 10(b)

of the Exchange Act, is that the alleged materially false or misleading statements created and/or maintained artificial inflation in the price of Apache common stock, which caused damages when that artificial inflation was removed upon the issuance of the alleged corrective disclosures, which caused declines in the price of Apache common stock.

The proposed damages methodology seeks to measure price inflation on a Class-wide basis by analyzing the change in the price of Apache common stock caused by the alleged corrective disclosures, with the understanding that these price declines may reflect the dissipation of the price inflation created and/or maintained by the earlier alleged misstatements. Here, an event study can be constructed to isolate Apache-specific price movements caused by the revelation of the true facts related to the alleged fraud from price movement, if any, caused by unrelated information. After isolating the price impact of the alleged misstatements and omissions, one can estimate price inflation attributable to the alleged fraud for each day of the Class Period and on a Class-wide basis for each member of the Class. From there, a Class member's actual purchases and sales of Apache common stock during the Class Period can be used to calculate individual damages.

For each Class member, any damages incurred on shares of Apache common stock purchased during the Class Period and retained through the end of the Class Period are equal to the amount of inflation at the time shares were purchased. For shares of Apache common stock purchased and sold within the Class Period, any damages would be equal to the difference between the amount of inflation at the time of purchase and the amount of inflation at the time of sale. If a share purchased during the Class Period is sold prior to the date of the first alleged corrective disclosure, it will be ineligible for damages. Also ineligible for damages would be any share of Apache common stock that is both purchased and sold between two consecutive corrective disclosures. Finally, any damages calculation would incorporate the

damages limitation provisions of the Private Securities Litigation Reform Act, which I discuss in paragraph 69 of my Initial Report.

Q. Have you undertaken to apply that methodology in this case?

A. No. I have not been asked to calculate damages in this case, and I have not formed an opinion on the amount of damages, if any, that may be recoverable for the Class or for any individual Class member.

## III. THE ALLEN REPORT

Q. Earlier, I showed you **Exhibit 4**, which is a copy of the Allen Report, do you recall that?

A. Yes.

Q. In the Allen Report, does Ms. Allen offer any opinion on whether the market for Apache common stock was efficient during the Class Period?

A. No. She does not. Rather, Ms. Allen assumes that Apache common stock traded in an efficient market during the Class Period.

Q. In the Allen Report, does Ms. Allen offer any opinion addressing how damages may be calculated in this case?

A. No. Ms. Allen does not contest my opinion that Class-wide damages can be calculated in this case using a method that is common to all Class members and in a manner that is consistent with Plaintiffs' theory of liability.

Q. Broadly speaking, what opinions does Ms. Allen express in the Allen Report?

A. In general terms, Ms. Allen challenges price impact in an effort to rebut the fraud-on-the-market presumption of reliance that Plaintiffs have invoked. Notably, she does not make this argument as to the entire Class Period that Plaintiffs pled in the Complaint. In this regard, Ms. Allen did not analyze, and makes no argument concerning, the portion of the Class Period

that runs from September 7, 2016 through February 22, 2018. Rather, Ms. Allen limits her price impact arguments to only a portion of the Class Period running from February 23, 2018 through March 13, 2020. Ms. Allen contends that none of the three alleged corrective disclosures made during this latter portion of the Class Period evidences price impact from any of the alleged misstatements made during the entirety of the Class Period.

Q. What is your understanding of the "***Focus Period***" to which Ms. Allen directs her opinions?

A. Ms. Allen's so-called "Focus Period" is the portion of the Class Period to which Ms. Allen directs her price impact arguments, and it runs from February 23, 2018 through March 13, 2020.

Q. If I refer to the portion of the Class Period running from February 23, 2018 through March 13, 2020 as the "Focus Period," will you understand what I'm referencing?

A. Yes. I will.

Q. In the Allen Report, does Ms. Allen offer any opinions directed to the portion of the Class Period in this case running from September 7, 2016 through February 22, 2018?

A. No. She does not.

Q. If I refer to the portion of the Class Period running from September 7, 2016 through February 22, 2018 as the "Pre-Focus Period," will you understand what I'm referencing?

A. Yes. I will.

Q. Do you have an opinion on whether Ms. Allen's "Focus Period" construct is an appropriate way to evaluate whether the alleged misstatements impacted Apache's common stock price during the Class Period in this case?

A. Yes. I believe it's inappropriate for Ms. Allen to contend that she can disprove that all of the alleged misstatements made during the entire Class Period had any price impact

during the entire Class Period by looking only at the portion of the Class Period that Defendants' counsel asked her to examine. As I detail in my Reply Report, there are numerous critical flaws in Ms. Allen's effort to segregate these portions of the Class Period pursuant to defense counsel's instructions, including that Ms. Allen fails to account for all of the positive price impact – three consecutive days of undisputed statistically significant price increases – associated with Defendants' September 7, 2016 alleged misstatements, that Plaintiffs allege was dissipated through the alleged corrective disclosures, including the three made during the Focus Period.

## IV. THE NYE REPLY REPORT

Q. Dr. Nye, we've marked as **Exhibit 5**, a document entitled "***Expert Reply Report of Zachary Nye, Ph.D.***," dated August 11, 2023, do you have that?

A. Yes. I do.

Q. If you turn to page 70 of **Exhibit 5**, is that your signature?

A. Yes. It is.

Q. Does **Exhibit 5** appear to be a true and correct copy of a report that you signed in this case on August 11, 2023?

A. Yes. It does.

Q. Going forward, if I refer to your report marked as **Exhibit 5** as your "Reply Report," will you understand what I'm referencing?

A. Yes. I will.

Q. Can you please describe what your assignment was in connection with preparing your Reply Report?

A. Yes. My assignment was to review the Allen Report and to reply to the price impact opinions that Ms. Allen expresses in the Allen Report.

Q. In preparing the Reply Report, did you have access to any deposition testimony

that Ms. Allen gave in this matter?

A. Yes. I did.

Q. Did you consider Ms. Allen's deposition testimony in this case in preparing your Reply Report?

A. Yes. I did. I cite certain of Ms. Allen's July 27, 2023 deposition testimony in my Reply Report, particularly her sworn testimony that she did not consider, and does not express any opinions on, the uncontested price impact from either the alleged materially false or misleading statements or the alleged corrective disclosures made during the Pre-Focus Period.

Q. Can you please summarize the opinions that you express in your Reply Report?

A. Sure. In my Reply Report, I opine that Ms. Allen has failed to present evidence showing that the alleged misstatements made during the Class Period had no price impact. Critically, Ms. Allen fails to demonstrate a lack of price impact because she makes no effort, and therefore fails, to demonstrate when the front-end price impact associated with Defendants' September 7, 2016 misstatements about Alpine High, which caused three undisputed statistically significant increases in the price of Apache common stock, dissipated. With respect to the three corrective disclosures during the Focus Period that Ms. Allen purports to analyze, she likewise fails to present evidence of no price impact, and fails to explain why the price of Apache common stock declined in response to the information released on April 23, 2019, October 25, 2019, or March 16, 2020 – the three alleged corrective disclosure dates during her Focus Period. Indeed, it is impossible to rule out price impact when one has no idea what caused the stock price to decline on a given corrective disclosure date.

**A. <u>Ms. Allen Fails to Analyze Statistically Significant "Front-End" Price Impact</u>**

Q. To your understanding, does one seeking to rebut the fraud-on-the market presumption of reliance have to disprove both front-end and back-end price impact?

A. Yes. It's my understanding that one seeking to rebut the presumption of reliance must prove that the alleged misstatements had no price impact when made and when they were allegedly corrected.

Q. To your understanding, when positive front-end price impact exists, can one disprove that positive front-end price impact by examining only back-end price impact?

A. No. My understanding is that once positive front-end price impact is demonstrated, price impact exists in the context of efforts to rebut the fraud-on-the market presumption of reliance. Indeed, in paragraph 20 of the Allen Report, Ms. Allen states that "***the price impact of an alleged misstatement can be analyzed . . . directly by analyzing the market reaction following an alleged misrepresentation***." Directly contradicting herself, however, Ms. Allen tries to cast to the side all of the positive front-end price impact from the September 7, 2016 alleged misstatements here, instead focusing the entirety of her analyses on her self-made Focus Period, which I believe is an artifice created to try to sidestep the undisputed positive front-end price impact present here.

Q. Turning to your Reply Report, can you briefly summarize the opinion you express in Section IV, which spans paragraph 7 through paragraph 14 of your Reply Report?

A. Sure. The opinion that I express in Section IV of my Reply Report is that Ms. Allen entirely failed to prove that the alleged misstatements made during the Class Period had no impact at all on the price of Apache common stock because, while recognizing that the price of Apache common stock underwent three consecutive days of statistically significant increases following Defendants' announcement of Alpine High on September 7, 2016, she completely ignores all of that positive price impact in her analyses. Ms. Allen never explains whether or when that positive price impact, interchangeably referred to as "inflation," dissipated, including because she offers no analysis at all pertaining to the first two corrective disclosures – the ones

that preceded her so-called "Focus Period." As a result, there is documented price impact from the alleged misstatements in this case on days 1, 2, and 3 of the Class Period for which Ms. Allen does not account. This fundamental flaw makes her Focus Period arguments irrelevant because this case is not a pure price maintenance case, where one looks to the price declines upon the alleged corrective disclosures to *imply* front-end price impact. There is no need to *imply* front-end price impact here, as it demonstrably exists, and Ms. Allen has conducted zero analyses to account for it, or whether it was removed from Apache's stock price.

Q. Does Ms. Allen evaluate price impact for the entire Class Period?

A. No. As I stated earlier, Ms. Allen confines all of her analyses to her "Focus Period," and does nothing to account for the Pre-Focus Period.

Q. How do you know that Ms. Allen limited her price impact analysis to the "Focus Period"?

A. I believe that's clear from the Allen Report. Moreover, Ms. Allen testified in this case, among other things, that: (1) she is not expressing an opinion that no price impact existed during the Pre-Focus Period; (2) she did not analyze whether the two Pre-Focus Period corrective disclosures demonstrate price impact for the Pre-Focus Period misstatements; (3) she did not analyze whether there was front-end price impact for any of the Pre-Focus Period misstatements; and (4) she has not analyzed and does not know whether the positive price impact from the Pre-Focus Period misstatements had fully dissipated before the beginning of the Focus Period. I reference portions of Ms. Allen's deposition testimony on these concessions in paragraph 9, footnote 20 of my Reply Report.

Q. How, if at all, does Ms. Allen's restriction of her analysis to the so-called "Focus Period" affect the price impact opinions that she expresses for the full Class Period?

A. As I testified earlier, I believe Ms. Allen's artificially cabined analysis forecloses

any ability to demonstrate that the alleged misstatements made during the Class Period had no price impact during the Class Period.

Q. In paragraph 9 of the Reply Report, you state, "***Ms. Allen fails to demonstrate a complete lack of price impact during the Class Period because her Report nowhere addresses whether any of the alleged misrepresentations made during the Pre-Focus Period positively impacted the price of Apache's common stock, or whether any of the alleged corrective disclosures made during the Pre-Focus Period fully dissipated all of the positive price impact created by the Pre-Focus Period alleged misstatements***," do you see that?

A. Yes.

Q. In your opinion, what specific positive "front-end" price impact did Ms. Allen fail to evaluate?

A. Upon the announcement of the Alpine High discovery on September 7, 2016, Apache's common stock price experienced three consecutive days of statistically significant increases. As I set forth in paragraph 13 of my Reply Report and Exhibit 11B of my Initial Report, under my event study, Apache's stock price increases on September 7, 8, and 9, 2016 are statistically significant at the 99.96%, 97.58%, and 98.18% confidence levels, respectively. Similarly, Ms. Allen's alternative event study finds statistically significant price increases in Apache common stock for these three days at the 99.92%, 98.90%, and 97.63% confidence levels, respectively.

Q. As you state in paragraph 12 of your Reply Report, is it your opinion that "***[w]ithout analyzing the extent to which the alleged misrepresentations made prior to February 23, 2018 impacted Apache's stock price, Ms. Allen has no basis to opine, nor does she opine, that the alleged artificial inflation in Apache's stock suddenly vanished at the outset of her Focus Period***"?

A. Yes. That is part of my opinion. And, as I state later in paragraph 12 of the Reply Report, "***[g]iven that Ms. Allen's price impact analysis is deliberately and demonstrably incomplete, she cannot reliably opine on whether there is 'a link between any of the alleged misrepresentations made during the alleged Class Period' . . . and Apache's stock price during the Focus Period***."

Q. What evidence, if any, do you believe supports a conclusion that the announcement of Alpine High is what caused the three straight days of statistically significant price increases in Apache common stock on September 7, 8, and 9, 2016?

A. In a prior answer, I provided the confidence levels of the statistically significant price increases on each of those days under both my event study and Ms. Allen's event study. Additionally, for these three days, again September 7, 8, and 9, 2016, there was no other Apache-specific value-relevant news issued. As a result, neither I nor Ms. Allen has identified any other Apache-specific information that could have contributed to any portion of the consecutive statistically significant increases in the price of Apache common stock on these three days.

Moreover, I conducted an exhaustive review of news and analyst reports issued on or around these days, which supports that these statistically significant price increases are solely attributable to the Alpine High announcement. News media and securities analysts during this time focused on the announcement of Alpine High and attributed the increases in Apache's stock price on those days to the Alpine High announcement. I include in paragraph 13 of my Reply Report excerpts from a number of such sources.

Q. Dr. Nye, we've marked as **Exhibit 6** a demonstrative document that I understand you created to accompany your testimony today, do you have that?

A. Yes. I do.

Q. What is **Exhibit 6**?

A. For this Exhibit, I have included the same excerpts of analyst reports and news media stories that I set forth in paragraph 13 of my Reply Report, just to aid in my testimony today. As you can see both in paragraph 13 of my Reply Report and in **Exhibit 6**, securities analysts and the news media attributed the increases in Apache's stock price from September 7 through September 9, 2016 to Apache's announcement of Alpine High via Apache's September 7, 2016 press release and through the statements that Defendants made at the September 7, 2016 Barclays CEO Energy-Power Conference, which the Complaint also identifies as the "Barclays Conference."

Q. Generally speaking, what statements did Defendants make when announcing Alpine High on September 7, 2016?

A. The Complaint, of course, sets out all of the alleged misstatements in detail. But in general, the Complaint alleges that when announcing Alpine High on September 7, 2016, Defendants made materially false or misleading statements concerning the putative attributes of the play that supposedly made it an extraordinary asset for Apache, including statements regarding: (1) quantities of oil, gas, and wet gas at Alpine High and corresponding drilling locations; (2) Alpine High's ability to perform well economically at very low oil and gas prices; and (3) Alpine High's status as a world class resource and transformational discovery that would drive shareholder value for years to come.

Q. Dr. Nye, we've marked as **Exhibit 7** a document entitled "Appendix A: Purportedly False / Misleading Statements challenged in the Consolidated Class Action Complaint (CCAC)," do you have that?

A. Yes. I do.

Q. What is **Exhibit 7**?

A. This document is Appendix A to Plaintiffs' Opposition to Defendants' Motion to

Dismiss, which was filed on April 22, 2022.

Q. Are you generally familiar with these alleged misstatements from your work in this case?

A. Yes. I am generally familiar, though I have not memorized the alleged misstatements in this case.

Q. Based upon your work in this case, are you aware of whether, during the Class Period, Defendants repeated any of the statements they made about Alpine High when announcing the play on September 7, 2016?

A. Yes. During the Class Period, Defendants repeated, in words or substance, many of the same misstatements they made when announcing Alpine High on September 7, 2016.

Q. Based upon your work in this case, are you aware of whether, during the Focus Period portion of the Class Period, Defendants repeated any of the statements they made about Alpine High when announcing the play on September 7, 2016?

A. Yes. In particular, during the Focus Period, Defendants repeated the September 7, 2016 misstatements representing: (1) that Alpine High would perform well at very low commodity prices; (2) the number of putative drilling locations at Alpine High; and (3) that Alpine High was a transformational discovery that would drive Apache shareholder value for years.

Q. Dr. Nye, by looking at what we've marked as **Exhibit 7**, can you please identify when, during the Class Period, Defendants made misstatements that repeated the misstatements made when announcing Alpine High on September 7, 2016?

A. Yes. Starting with representations concerning the economics of Alpine High at very low commodity prices, looking at **Exhibit 7**, I see that Defendants substantially repeated such statements on: (1) September 21, 2016, as alleged in paragraph 204 of the Complaint and as

reflected at pages 9-11 of this Appendix A; (2) September 28, 2016, as alleged in paragraph 206 of the Complaint and as reflected at page 11 of this Appendix A; (3) February 14, 2017, as alleged in paragraphs 216-217 of the Complaint and as reflected at pages 16-19 of this Appendix A; (4) February 23 2017, as alleged in paragraph 224 of the Complaint and as reflected at pages 20-21 of this Appendix A; (5) May 4, 2017, as alleged in paragraphs 231-232 of the Complaint and as reflected at pages 27-29 of this Appendix A; (6) August 3, 2017, as alleged in paragraph 244 of the Complaint and as reflected at pages 36-37 of this Appendix A; and (7) February 22, 2018, as alleged in paragraph 256 of the Complaint and as reflected at pages 41-43 of this Appendix A.

Continuing with the representations made on September 7, 2016 that Alpine High was a "***world-class resource play***" and "***immense resource***" that would "***deliver significant value for our shareholders for many years***," I see that Defendants substantially repeated such statements on: (1) September 21, 2016, as alleged in paragraph 204 of the Complaint and as reflected at pages 9-11 of this Appendix A; (2) November 3, 2016, as alleged in paragraph 208 of the Complaint and reflected at pages 12-14 of this Appendix A; (3) November 18, 2016, as alleged in paragraph 212 of the Complaint and as reflected at page 14 of this Appendix A; (4) May 4, 2017, as alleged in paragraph 229 of the Complaint and as reflected at page 26 of this Appendix A; (5) May 11, 2017, as alleged in paragraph 239 of the Complaint and as reflected at pages 31-33 of this Appendix A; (6) February 22, 2018, as alleged in paragraph 254 of the Complaint and as reflected at pages 41-43 of this Appendix A; (7) February 26, 2018, as alleged in paragraph 259 of the Complaint and as reflected at page 45 of this Appendix A; (8) May 30, 2018, as alleged in paragraph 263 of the Complaint and as reflected at pages 48 of this Appendix A; and (9) June 5, 2018, as alleged in paragraph 263 of the Complaint and as reflected at page 48 of this Appendix A.

As for Defendants' September 7, 2016 representations concerning the number of drilling locations at Alpine High, I see that Defendants substantially repeated such statements on: (1) September 21, 2016, as alleged in paragraph 204 of the Complaint and as reflected at pages 9-11 of this Appendix A; (2) November 18, 2016, as alleged in paragraph 212 of the Complaint and as reflected at page 14 of this Appendix A; (3) February 23, 2017, as alleged in paragraphs 224 and 225 of the Complaint and as reflected at pages 20-23 of this Appendix A; (4) March 27, 2017, as alleged in paragraph 227 of the Complaint and as reflected at pages 23-26 of this Appendix A; (5) May 4, 2017 as alleged in paragraph 231 of the Complaint and as reflected at pages 27-29 of this Appendix A; (6) May 11, 2017, as alleged in paragraph 239 of the Complaint and as reflected at pages 31-33 of this Appendix A; (7) August 3, 2017, as alleged in paragraph 244 of the Complaint and as reflected at pages 36-37 of this Appendix A; (8) October 9, 2017, as alleged in paragraphs 247-248 of the Complaint and as reflected at pages 37-40 of this Appendix A; (9) February 23, 2018, as alleged in paragraph 258 of the Complaint and as reflected at pages 43-44 of this Appendix A; (10) February 26, 2018, as alleged in paragraph 259 of the Complaint and as reflected at page 45 of this Appendix A; (11) March 26, 2018, as alleged in paragraph 259 of the Complaint and as reflected at page 46 of this Appendix A; (12) May 3, 2018, as alleged in paragraph 262 of the Complaint and as reflected at pages 46-48 of this Appendix A; (13) August 2, 2018, as alleged in paragraph 265 of the Complaint and as reflected at page 49 of this Appendix A; and (14) February 28, 2019, as alleged in paragraph 270 of the Complaint and as reflected at pages 51-52 of this Appendix A.

Q. Based upon your work in this case, are you aware of whether, in any of their alleged misstatements made during the Focus Period, Defendants referred to any of the prior alleged misstatements that they made about Alpine High during the Pre-Focus Period?

A. Yes. There are instances in which Defendants made misstatements during the

Focus Period portion of the Class Period in which they referred to misstatements that they made during the Pre-Focus Period. For example, looking at pages 46-48 of this Appendix A, there's a statement that Defendants made on May 3, 2018, alleged in paragraph 262 of the Complaint, where Defendants said "***recall that we increased our risk location count to more than 5,000 locations in our October [2017] webcast update…. While we are not updating our location count today, we are confident that as field delineation and development progresses, the risk location count will increase substantially over the next several years***.". Similarly, looking at page 53 of this Appendix A, Defendants made the following statement on May 15, 2019, alleged in paragraph 275 of the Complaint, which pointed back to Defendants' September 7, 2016 representations concerning putative resources in place at Alpine High: "***Evaluation of the oil play at Alpine High will continue to evolve, but our view of 3 billion barrels of associated oil in place in just the Woodford and Barnett remains unchanged***."

Q. In your opinion, what effect, if any, did Defendants' repetition during the Focus Period of the statements they made when announcing Alpine High on September 7, 2016 have on the price of Apache common stock during the Focus Period?

A. Both Ms. Allen and I agree that confirmatory misstatements, which are ones that repeat or confirm the substance of an earlier misstatement, will not affect the price of a security that trades in an efficient market. So, it's my opinion that, under Plaintiffs' theory of liability, the statements Defendants made during the Class Period, including the Focus Period, which repeated or confirmed Defendants' September 7, 2016 misstatements, served to maintain the positive price impact, or artificial inflation, that Defendants' September 7, 2016 misstatements created. Thus, under Plaintiffs' theory of liability, the inflation created by Defendants' September 7, 2016 misstatements remained in Apache's common stock price until it was gradually removed when Apache's stock price declined in response to the information released

on the five alleged corrective disclosures, including the three corrective disclosures made during the Focus Period.

Q. In your opinion, what effect, if any, did Defendants' express references, during the Focus Period, back to the substance of misstatements made in the Pre-Focus Period, have on the price of Apache's common stock during the Focus Period?

A. These repetitions of, and callbacks to, prior misstatements during the Focus Period would have the same price effect as discussed in my last answer. These statements would reinforce and confirm the prior statements Defendants had already made, and to which they expressly referred.

Q. Based upon your review of the Allen Report, do you believe that Ms. Allen considered all of Defendants' misstatements in arriving at her opinion that no Class Period misstatements had an impact on Apache's stock price during the Focus Period?

A. No. As I state in the Reply Report, I believe that Ms. Allen derives her entire analysis, including her price impact arguments, from an unduly narrow view of the subject matter and substance of the alleged misstatements that Defendants made about Alpine High.

Q. In your opinion, which of Defendants' alleged misstatements does Ms. Allen overlook?

A. I give examples at paragraphs 16 and 17 of my Reply Report. For example, Ms. Allen ignores Defendants' repeated representations that Alpine High was a "***world class resource play***" and a "***transformational discovery***" that would "***deliver significant value for our shareholders for many years***" and "***drive incremental growth and returns for years to come***." She also did not adequately consider Defendants' claims that Alpine High would perform well economically "***even if oil or gas prices fell substantially***," including Defendant Christmann's September 7, 2016 statement that Alpine High was a "***very wet gas resource***" in which Apache

would "***virtually get the [dry] gas for free***." Moreover, the day before Ms. Allen's Focus Period begins, Defendants reiterated a number of the September 7, 2016 Alpine High misstatements that Ms. Allen ignores, including the claims that "***at Alpine High, we are building out a world-class resource play that will change the course of Apache***" and that Alpine High would "***drive capital investment, and very soon, free cash flow for decades to come***." Also on February 22, 2018, Defendants claimed that Alpine High "***is going to really hum below $2 on the gas side***" and that "***[w]e would not be making this type of investment on the midstream or the upstream side if we thought there was a sensitivity that was close to anything that would come into not making it work under very, very low gas and NGL and oil prices***."

Q. What impact, if any, do you believe Ms. Allen's failure to consider certain of the alleged misstatements in this case has upon the opinions that she offers?

A. As I state in paragraph 15 of my Reply Report, Ms. Allen's narrow view of the allegations in this case causes her to mistakenly believe that each and all of Defendants' misstatements could only be corrected by information sufficient to change the market's expectations about Alpine High's reserves or the mix of oil and wet gas, as compared to dry gas.

Additionally, as I state in paragraph 18 of my Reply Report, Ms. Allen's failure to consider Defendants' repeated statements that Alpine High would perform well even in a very low commodity price environment caused her to overlook what I believe to be a clear relationship between those misstatements and Defendants' April 23, 2019 announcement that Apache was deferring natural gas production at Alpine High in response to low gas prices. Similarly, the inadequate consideration that Ms. Allen gave to Defendants' representations that Alpine High was a "***world class resource that will change the course of Apache***" and that Alpine High would "***deliver incredible value to Apache and its shareholders for many, many years to come***" caused her to overlook what I believe to be a clear relationship between those

misstatements and Steve Keenan's sudden resignation announced on October 25, 2019.

**B. April 23, 2019**

Q. On what date was the first of the three alleged corrective disclosures during the Focus Period that Ms. Allen contends does not demonstrate that Defendants' misstatements during the Class Period had any price impact?

A. April 23, 2019.

Q. Where, in your Reply Report, do you address Ms. Allen's arguments that the April 23, 2019 corrective disclosure evidences no price impact from Defendants' misstatements during the Class Period?

A. I address Ms. Allen's points about the April 23, 2019 corrective disclosure in Section VI of my Reply Report, which runs from paragraph 19 through paragraph 33.

Q. What was announced on April 23, 2019?

A. On April 23, 2019, Apache announced, via a press release issued before the market opened that day, that it had initiated natural gas volume deferrals at Alpine High in response to low natural gas prices. Apache did not indicate the precise scope of the deferred production or how long the deferrals would persist, stating instead that it would return to natural gas production when it believed it would be profitable to do so.

Q. To what Class Period misstatements, if any, does the April 23, 2019 corrective disclosure relate?

A. In paragraph 33 of my Reply Report, I identify the alleged misstatements to which the April 23, 2019 corrective disclosure relates. Specifically, the announced deferral of natural gas production at Alpine High in response to very low prices related to Defendants' prior claims that Alpine High would perform well at very low commodity prices, including very, very low natural gas prices.

As I testified earlier, these statements include Defendants' claims that Alpine High would perform well economically "***even if oil or gas prices fell substantially***," including Christmann's September 7, 2016 statement that Alpine High was a "***very wet gas resource***" where Apache would "***virtually get the [dry] gas for free***," as well as Defendants' claims on February 22, 2018 that Alpine High "***is going to really hum below $2 on the gas side***" and that "***[w]e would not be making this type of investment on the midstream or the upstream side if we thought there was a sensitivity that was close to anything that would come into not making it work under very, very low gas and NGL and oil prices***."

Q. What response, if any, did Apache's stock price have to the April 23, 2019 announcement?

A. In the Complaint, Plaintiffs plead a four-day price decline in response to the April 23, 2019 corrective disclosure. As a result, I measured the price response of Apache common stock over those same four days, which are April 23-26, 2019, and I present my results in paragraph 23 of my Reply Report. As depicted there, the two-, three- and four-day declines in Apache's stock price are statistically significant at the 92.58%, 98.96% and 99.01% confidence levels, respectively, under my event study model, while the three- and four-day stock price declines are likewise statistically significant at the 94.33% and 96.56% confidence levels, respectively, under Ms. Allen's alternative event study model.

Q. Was any other Apache-specific value-relevant information released on April 23, 2019?

A. No, and Ms. Allen has not identified any such information.

Q. Was any other Apache-specific value-relevant information released on April 24 through April 26?

A. No, and Ms. Allen has not identified any such information.

Q. Can you explain the three bullet points in paragraph 20 of your Reply Report?

A. Those bullet points summarize the arguments that Ms. Allen makes in her effort to show that there is no price impact associated with the April 23, 2019 corrective disclosure.

Q. Ok, let's take those one at a time – first, do you agree with Ms. Allen that the fact that the decline in Apache's common stock price on April 23, 2019, the day of the announced natural gas production deferral at Alpine High, was not statistically significant at or above the 95% confidence level disproves price impact?

A. No, I don't agree. As an initial matter, I am not aware of any bright line test that courts apply whereby a certain confidence level of statistical significance, like the 95% confidence level that Ms. Allen insists upon here, is required to demonstrate price impact. This is unsurprising, as the lack of a statistically significant price response at or above the 95% confidence level does not mean that the misstatement being measured had no price impact at all.

In Section X of my Reply Report, I go into considerable detail as to why it is a fundamental error of statistical inference to conclude that there is an absence of price impact on the sole basis that the information in question induced a price response that is statistically significant below the 95% confidence level. As I discuss there, Ms. Allen's null hypothesis is effectively that the alleged misrepresentations or corrective events had no effect on Apache's stock price. When testing the null hypothesis of no effect, a statistically significant result will have a small *p*-value, such as less than 5% when applying the 95% confidence level, thereby indicating the observed data are far from what is expected under the null hypothesis—too far to be readily explained by the operations of chance. That discredits the null hypothesis. However, while the *p*-value gives the chance of getting evidence against the null hypothesis as strong or stronger than the evidence at hand, it does not give the chance that the null is true, nor the probability that the results occurred because of chance. Indeed, according to the frequency

theory of statistics, there is no meaningful way to assign a numerical probability to the null hypothesis. Despite this, Ms. Allen concludes from results that are statistically significant below the 95% confidence level that her null hypothesis of no effect is true.

Additionally, there is no requirement in economics that information must induce a price reaction that is considered to be statistically significant at a particular level, such as 95.01%, rather than 94.33% or 92.58%, to be deemed material. Indeed, the notion that material information must induce a statistically significant price reaction is incongruous with the fundamental tenets of financial economics.

Q. In your opinion, is there a minimum confidence level, below which you believe there could be conclusive evidence of no price impact in connection with the release of new, value-relevant information about a company?

A. No. Although I note that the confidence levels associated with the multi-day returns under my event study model are above the 92% confidence level, according to the frequency theory of statistics, there is no such lower bound confidence level under which the null hypothesis of no effect can be accepted as true. Furthermore, as I state in paragraph 68 of my Reply Report, the science of financial economics explicitly allows for security prices to efficiently adjust to new information that even minimally affects the present value of the expected cash flows an investor will receive from owning it. Thus, in an efficient market, the disclosure of new, value-relevant information will, by definition, always have price impact, but may not induce a price reaction large enough to qualify as being statistically significant at a given threshold confidence level.

Q. In paragraph 65, you state: "***Ms. Allen's acceptance of the null hypothesis is particularly improper, given the well-known fact that single-firm event studies, such as those she conducted for Apache stock, have low statistical 'power,' and are thus prone to 'accepting***

***the null hypothesis when the alternative hypothesis is true' (i.e., prone to making Type II errors)***," do you see that?

A. Yes, I do.

Q. Can you explain what you mean by that?

A. Sure. In statistical testing, the "power" of a test is best understood as the ability of the statistical analysis to find effects when they exist and when they are truly present. However, as the academic literature and courts have recognized, single-firm event studies conducted in connection with securities litigation, like this case, have lower statistical power than event studies commonly performed for academic research. As a result, single-firm event studies have a lower probability of finding statistically significant results than the cross-sectional or multi-firm event study commonly used in academic research. This is primarily because, as the name suggests, single-firm event studies draw their conclusions from a single observation (*i.e.*, the price reaction of a single firm's stock to a single event's occurrence), whereas academic event studies typically involve hundreds, if not thousands, of firms from which to assess the average price impact across a much larger sample of event observations. The larger sample size enables the competing firm-specific stock price volatility caused by unrelated confounding factors to cancel out across the firm-event observations, thereby allowing researchers to better focus on the average price impact of the subject corporate event being examined. Thus, while an academic multi-firm event study may find that a given corporate disclosure is associated with a statistically significant price impact, a single-firm event study of the same or very similar disclosure may not, even when price impact is truly present. Accordingly, conflating price impact and statistical significance in the context of a single-firm event study, as Ms. Allen does, is particularly improper. Indeed, as quoted in paragraph 67 of my Reply Report, according to the Federal Judicial Center's *Reference Manual on Scientific Evidence*, "***[w]hen a study with low***

***power fails to show a significant effect, the results may therefore be more fairly described as inconclusive than negative. The proof is weak because power is low***."

Q. How, if at all, does the low statistical power of a single-firm event study affect the reliability of the tests you conducted to determine whether the market for Apache common stock was efficient during the Class Period?

A. It does not affect the reliability of the results I generated in my market efficiency event study. Indeed, it makes the prevalence of statistically significant stock price changes found by my event study of earnings-related events during the Class Period all the more remarkable. Specifically, the event study that I ran in connection with concluding that the market for Apache common stock was efficient during the Class Period, which Ms. Allen does not challenge, is consistent with the event studies that I've conducted at the class certification stage in numerous cases alleging claims under the federal securities laws. No court has determined that I failed to establish market efficiency for the security in question.

Furthermore, as I state in paragraph 66 of my Reply Report, the relatively low statistical power associated with single-firm event studies implies that "***[they] are inclined not to find statistical significance, when in fact a company-specific return was caused by the release of material, value-relevant information on a given event date***." Yet, despite this downward bias against finding statistical significance, my event study still found that Apache common stock experienced a statistically significant stock price change in reaction to nine of the fourteen earnings-related announcements during the Class Period, thereby confirming that Apache's common stock price typically reacted more strongly on event dates than on non-event dates.

Q. If you look ahead to paragraph 68 of the Reply Report, you state in the first sentence that: "***there is no requirement in economics that material information must induce a price reaction that is considered to be statistically significant at a particular level. Indeed, the***

***notion that material information must induce a statistically significant price reaction is incongruous with the fundamental tenets of financial economics***," do you see that?

A. Yes, I do.

Q. Can you explain what you mean by that?

A. Sure. None of the widely accepted principles upon which the field of financial economics is predicated make reference to statistical significance. Rather, as I mentioned earlier, the science of financial economics explicitly allows for security prices to efficiently adjust to new information that even minimally affects the present value of the expected cash flows an investor will receive from owning it, which by definition will not induce a price reaction large enough to qualify as being statistically significant at the 95% confidence level. This does not mean that such information lacks price impact in an efficient market, but rather that the value of that information is simply worth less to investors than a different disclosure that induces a statistically significant price reaction. Moreover, by design, the calculation of statistical significance does not entail any analysis of company-specific news, thereby making it incapable, on its own, of being a reliable indicator of whether such information would otherwise be considered economically important to the trading decision of a reasonable investor. In sum, while statistical significance may be an objective manner in which to establish whether a return is extreme enough to be considered rare, it is not a necessary condition to demonstrate price impact, nor does the lack of statistical significance constitute statistical proof of the absence of price impact.

Q. Would you say that a security price reaction that *is* statistically significant at or above the 95% confidence level *is* evidence of price impact?

A. It certainly could be. As I've testified, and as is reflected in my Reply Report, I do not believe that there is a rigid confidence level of statistical significance above which you

have price impact and below which you do not. Even for a price response that is statistically significant at or above the 95% confidence level, the price reaction would require further analysis. For one, you would want to study the total mix of information affecting the price of the security at issue on that day, if you are testing a single-day price response. It could be the case that information unrelated to what you are testing caused all or a portion of the security price reaction, or, alternatively, offset the price reaction of that security to the information that you are examining. That is a notable shortcoming of Ms. Allen's analyses of the three Focus Period corrective disclosures that she addresses in her reports, where she effectively opines that something unrelated to the alleged misstatements must have caused Apache's stock price to decline, but conducts no analyses to identify any such confounding information that could have done so, much less quantify its impact on Apache's stock price.

Q. Turning back to paragraph 22, still addressing Ms. Allen's contention that the April 23, 2019 corrective disclosure fails to demonstrate price impact because the first day price reaction is statistically significant below the 95% confidence level, you state: "***Ms. Allen's opinion is also premised on the assumption that a one-day event window is the only appropriate event window to use when assessing price impact for the April 23, 2019 disclosure***," do you see that?

A. Yes, I do.

Q. What do you mean by that?

A. For the April 23, 2019 corrective disclosure, Plaintiffs plead a four-day price reaction. In the Allen Report, however, Ms. Allen fails to consider Apache's full price reaction over this four-day event window. Instead, she focuses her analysis on Apache's single-day stock price reaction on April 23, 2019, and notes that the single-day price reactions on the subsequent three trading days are not statistically significant at the 95% confidence level. Again, she did not

analyze the multi-day price response, as Plaintiffs plead.

Q. Generally speaking, can you identify circumstances in which you believe measuring the price response of a security to news over a multi-day window is appropriate?

A. In general, it may be appropriate when, as here, there is no other news affecting the stock price, as well as for the reasons that I identify in Section XI of my Reply Report.

Q. One example you give in Section XI, paragraph 71 of the Reply Report as to when you believe it's appropriate to measure the price response of a security to news over a multi-day window is "***when information is difficult to interpret***," do you see that?

A. Yes, I do.

Q. Is it your opinion that the information contained in the April 23, 2019 corrective disclosure was difficult for investors to interpret?

A. The information that I've reviewed suggests that the deferral of natural gas production at Alpine High announced on April 23, 2019 was negative, value-relevant information that was not fully expected by the market. Among other things, the duration and cash flow implications of the announced deferral were not stated, thereby creating uncertainty with respect to the impact of this decision on Apache's long-term prospects. As I reference in paragraphs 25-29 of my Reply Report, this uncertainty is reflected in the analyst commentary during the four trading days running from April 23, 2019 through April 26, 2019.

For example, as I reference in paragraph 27, analysts with Mizuho and Tudor Pickering Holt & Co. specifically called out the uncertainty in Apache's deferral announcement, remarking, among other things, that "***Apache needs to go into greater detail about how the deferrals will affect its production plans for the rest of 2019***" and "***[w]e'll be looking for color on volumes deferred thus far and the outlook from now through the scheduled [Gulf Coast Express] in-service date, with today's disclosure only quantifying current deferrals***."

Additionally, since I issued my two reports in this matter, I have seen documents reflecting [redacted]

Q. Dr. Nye, we've marked as **Exhibit 8**, a copy of an [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Q. In paragraph 75 of the Reply Report, you state that "***the use of a multi-day event window is a reliable and scientific methodology for estimating the price impact of certain corporate events in a manner that is consistent with market efficiency***," do you see that?

A. Yes, I do.

Q. Can you identify any other "corporate events" for which, in your opinion, using a multi-day window to estimate price impact is appropriate?

A. It may be appropriate to measure the price response of a security to any economically material corporate event over multiple days when the market's understanding of the initial information disclosed is refined over time, and when there is no new, value-relevant information about that event or confounding information that would be expected to materially contribute to the price response during that time.

Q. How, if at all, do you square your measurement of the response in Apache's stock price to the April 23, 2019 corrective disclosure over a four-day window with the one-day price response tests used in arriving at your market efficiency opinion in this case?

A. For the purpose of analyzing whether there was a cause-and-effect relationship between Apache's financial releases and the price reaction of Apache common stock, I performed a standard event study of the one-day price responses to the Company's earnings-related announcements during the Class Period, which is consistent with the event studies I have conducted in numerous other securities cases in which I have opined on market efficiency at the class certification stage over the past 11 years. However, while my event study in this context does indeed establish that Apache's stock price promptly responded to the disclosure of new, unexpected, value-relevant information, it does not necessarily imply that Apache's stock price response to those events was complete within a single day. Indeed, the length of time it takes for a company's stock price to fully reflect an informational disclosure is ultimately an empirical issue that the event study methodology has been tasked with analyzing in countless settings. As I discuss in Section XI of my Reply Report, practitioners of event studies, whether financial economists conducting research in academia or in the arena of securities litigation, agree that the use of a multi-day event window is a reliable and scientific methodology for estimating the price impact of certain corporate events in a manner that is consistent with market efficiency. Indeed, as I note in paragraph 22 of my Reply Report, even Ms. Allen has used multi-day event windows in her prior expert work. For instance, in *Beckel v. Fagron Holdings USA, LLC*, a securities fraud case involving a claim for damages against Defendants for violation of Section 10(b), Ms. Allen herself used a three-day stock price reaction following an alleged corrective disclosure to calculate plaintiff's damages. This is consistent with my understanding that, in *Halliburton II*, the Supreme Court acknowledged the debate among economists about the efficiency of capital markets, but refused to "endorse 'any particular theory of how quickly and completely publicly available information is reflected in market price,'" as I state in paragraph 75 of my Reply Report.

Q. Turning back in the Reply Report to paragraph 23, what results do you present?

A. In paragraph 23 of my Reply Report, I present the results of my event study and Ms. Allen's so-called "alternative event study" for each of the four individual trading days from April 23, 2019 through April 26, 2023. I also present the results from both studies when measuring the price response of Apache common stock to the April 23, 2019 corrective disclosure using a two, three and four-day event window.

Q. Can you explain those results?

A. Sure. As shown in the table set forth in paragraph 23 of my Reply Report, the two-, three- and four-day declines in Apache's stock price are statistically significant at the 92.58%, 98.96% and 99.01% confidence levels, respectively, under my event study model, which Ms. Allen does not contest. Under Ms. Allen's model, the three- and four-day stock price declines are likewise statistically significant at the 94.33% and 96.56% confidence levels, respectively.

Q. In your opinion, what, if any, conclusion should one reach based upon those results?

A. The conclusion one should reach is that Ms. Allen did not consider the multi-day price response of Apache common stock to the April 23, 2019 corrective disclosure, which is contrary to her prior expert work. Accordingly, her analysis of price impact associated with that disclosure is incomplete, at best. This is particularly true, as the Complaint pleads a four-day price decline in response to the April 23, 2019 corrective disclosures.

I also note that it is very rare to observe two, three, or four-day consecutive security price declines, particularly where the statistical significance of the price response increases over time. This pattern of price response, however, is consistent with what I observed in the analyst commentary, which is that the market was seeking further information to

appreciate the production deferral at Alpine High that Apache announced on April 23, 2019.

Q. What analyses do you set forth in paragraphs 24-31 of your Reply Report?

A. One claim Ms. Allen makes in the Allen Report to try to support her opinion that the April 23, 2019 corrective disclosure evidences zero price impact from the prior alleged misstatements is that the market fully expected the announced deferral, such that the disclosure of the deferral could not have caused any decline in the price of Apache common stock. In making this point, Ms. Allen references certain analyst reports to suggest that the deferral was expected. In paragraphs 24-31 of my Reply Report, I present analyst commentary that, contrary to Ms. Allen's claim, shows that the deferral was not fully expected.

For example, each of Capital One, Cowen, and Barclays lowered their respective Alpine High production estimates in response to the April 23, 2019 corrective disclosure. As I note in paragraph 26, other analysts remarked that the deferral was a "negative" event for Apache, which is inconsistent with Ms. Allen's notion that the market fully expected the deferral. The same is true with respect to the commentary from the financial and energy media, which I note in paragraph 28 of the Reply Report. Moreover, as I note in paragraph 29, even the two analysts that Ms. Allen cites to try to support her point that the market fully expected the deferral announced on April 23, 2019, viewed the announced deferral as negative. For these reasons and the others that I express in the Reply Report, the news and analyst commentary does not support Ms. Allen's contention that the market fully expected this deferral of natural gas production at Alpine High.

**C. <u>October 25, 2019</u>**

Q. On what date was the second of the three alleged corrective disclosures during the Focus Period that Ms. Allen contends does not demonstrate that Defendants' misstatements during the Class Period had any price impact?

A. October 25, 2019.

Q. Where, in your Reply Report, do you address Ms. Allen's arguments that the October 25, 2019 corrective disclosure evidences no price impact from Defendants' misstatements during the Class Period?

A. I address Ms. Allen's points about the October 25, 2019 corrective disclosure in Section VII of my Reply Report, which runs from paragraph 34 through paragraph 43.

Q. What was announced on October 25, 2019?

A. On October 25, 2019, Apache announced that Steve Keenan, Apache's Senior Vice President of Worldwide Exploration at the time, had resigned.

Q. Who is Steve Keenan?

A. Keenan was Apache's head geologist that the Company publicly credited and celebrated as making the putatively "transformational discovery" of Alpine High. He was also the Apache executive directly responsible for overseeing the operations and development of Alpine High, until his sudden resignation.

Q. What connection, if any, did Steve Keenan have to Alpine High at the time of the October 25, 2019 corrective disclosure?

A. Based upon the information that I've reviewed, Keenan was the single Apache executive that was most publicly connected to Alpine High. I discuss this in paragraph 40 of my Reply Report.

For example, Keenan attended the public announcement of Alpine High on September 7, 2016, where he was directly credited with spearheading the efforts that led to discovering the play that Defendants claimed was "***an immense resource that we believe will deliver significant value for our shareholders for many years***."

Similarly, during the Apache Annual Shareholders Meeting held on May 11,

2017, when bestowing the Apache President's Award upon Keenan, Defendant Christmann claimed about Keenan: "***Here at Apache, he and his team have made a significant discovery at Alpine High. It's a field that will deliver incredible value to Apache and its shareholders for many, many years to come***."

Based upon the Company's consistent public association of Keenan with Alpine High, media recognized that Keenan was "***the Godfather of Alpine High***."

Q. To what Class Period misstatements, if any, does the October 25, 2019 corrective disclosure relate?

A. Among others, the October 25, 2019 corrective disclosure relates to Defendants' repeated misstatements that Alpine High was a "***world-class***" resource that would be a source of shareholder value for years, including Defendants' claim that Alpine High was "***an immense resource that we believe will deliver significant value for our shareholders for many years***" and that Alpine High is "***a field that will deliver incredible value to Apache and its shareholders for many, many years to come***." Keenan's sudden resignation, without a named successor, directly undermined and called into question Defendants' repeated representations about the current and future value of Alpine High to Apache and its investors.

Q. What response, if any, did Apache's stock price have to that announcement?

A. According to my event study, the Company-specific return on October 25, 2019, as measured from the prior trading day's closing price to the closing price on October 25, 2019, was -5.55%, which is statistically significant at the 99.92% confidence level.

Q. What response, if any, did Ms. Allen observe in the price of Apache common stock to the October 25, 2019 announcement of Keenan's resignation?

A. According to Ms. Allen's alternative event study, the Company-specific return on October 25, 2019, also measured from the prior trading day's closing price to the closing price

on October 25, 2019, was -7.37%, which is statistically significant at the 100.00% confidence level.

Q. Was any other Apache-specific value-relevant information released on October 25, 2019?

A. No. And, Ms. Allen has not identified any such news that could have influenced Apache's stock price on October 25, 2019.

Q. In the Allen Report, what does Ms. Allen say about the October 25, 2019 corrective disclosure?

A. Ms. Allen suggests that the October 25, 2019 corrective disclosure does not show any price impact from Defendants' misstatements during the Class Period because she adopts certain early analyst speculation that the decline in the price of Apache common stock that day may have been attributable to investor concerns over Apache's exploration efforts in Suriname. Ms. Allen also contends that Keenan's sudden resignation from Apache did not reveal any new information about Alpine High that could have caused the October 25, 2019 decline in the price of Apache common stock.

Q. What response, if any, do you have to Ms. Allen's opinion that "***all analyst commentary following [the October 25, 2019] announcement explicitly attributed Apache's stock price decline on that day to market speculation about Apache's Suriname exploration and not [] to any new news about Alpine High***"?

A. It's grossly overstated and demonstrably untrue. Ms. Allen, herself, does not opine that the entire decline in Apache's stock price on October 25, 2019 was actually attributable to investor concern over Suriname. But, even in claiming that all analysts "***explicitly attributed***" that price decline to investor concern over Suriname, Ms. Allen misreads the analyst reports that she references and misstates their contents. It bears noting that each of the analyst

reports that Ms. Allen references was issued during the early hours of the trading day on October 25, 2019 and, therefore, not one of those reports reflects all information that emerged during the day concerning Keenan's resignation, and not one of those reports comments on the entirety of the movement in Apache's common stock price that day. Moreover, the analysts issuing the reports that Ms. Allen references did not, quote "***explicitly attribute***" the price decline to Suriname. Rather they each expressed a belief, well before trading had concluded on October 25, 2019, that the stock price decline in the early portion of the trading day may have resulted from investor concern over Apache's ongoing exploration efforts in Suriname.

Ms. Allen completely sidesteps the fact that the Company itself made clear early during the October 25, 2019 trading day that Keenan's resignation had no connection at all to Suriname. Ms. Allen likewise ignores that, diametrically opposite to what she claims, the author of the Credit Suisse analyst report that Ms. Allen cites explicitly stated that Alpine High's poor performance was "***likely a cause for Mr. Keenan's resignation***." Similarly, the SunTrust Robinson Humphrey (Truist) analyst report that Ms. Allen cites explicitly states "***[w]e do not believe the departure is linked to results***" of Apache's exploration efforts in Suriname.

Q. Can you explain the "***Apache Intraday Stock Price***" chart for October 25, 2019 that appears at the end of paragraph 37 on page 33 of your Reply Report?

A. Sure. Despite claiming that all analyst commentary explicitly attributed Apache's October 25, 2019 price decline to investor concern over Apache's exploration efforts in Suriname, Ms. Allen did not conduct any intraday analysis of the movement in Apache's stock price on October 25, 2019 to see how the early clarification from analysts and Apache that Keenan's resignation was unrelated to Suriname may have affected Apache's stock price. So, I conducted that analysis.

My intraday analysis shows that investor concern over Suriname did not cause the

statistically significant decline in the price of Apache common stock on October 25, 2019, and certainly did not cause not the entirety of the decline, as I understand Ms. Allen would have to show to disprove price impact associated with this corrective disclosure.

So, if you look at the October 25, 2019 Apache common stock price movement graph that I've included in paragraph 37 on page 33 of my Reply Report, you see the news of Keenan's resignation first hit the market at 9:44 a.m. Thereafter, there was a steep and quick decline in the price of Apache common stock. Then, at 10:19 a.m., RBC issued a report that included details from a conversation with Apache during which Apache stated that Keenan's resignation was not related to Suriname. Shortly after RBC issued this report, Apache's stock price quickly began to recover some of its early losses that day. Shortly after that, at 11:21 a.m., Apache, itself, issued a statement that "***Mr. Keenan's resignation is not connected to Suriname***." Following the Company's statement, the price of Apache common stock increased a bit more before stabilizing at around $22 per share for the remainder of the trading day. News related to Keenan's resignation continued to emerge during the trading day, including a Reuters article issued at 2:12 p.m., which stated "***Houston-based Apache told Reuters that Keenan's resignation is not connected to the well the company is currently drilling offshore in Suriname***." As a result, it appears that any investor concern that Keenan's resignation signaled negative results for Suriname was removed from the price of Apache common stock well before the close of trading on October 25, 2019.

Because both Ms. Allen and I measured the movement in Apache's common stock price in response to the October 25, 2019 corrective disclosure by examining the price change from the close of trading on October 24, 2019 to the close of trading on October 25, 2019, net of market and industry effects, there is no basis to conclude that investor concern over Suriname caused Apache to suffer a statistically significant price decline on October 25, 2019.

In any event, the graph I have included in paragraph 37 of my Reply Report also shows that Ms. Allen has failed to demonstrate that no portion of the substantial price decline in Apache common stock on October 25, 2019 resulted from the market's concerns about Alpine High occasioned by Keenan's sudden resignation, as I understand she must do to disprove price impact.

Q. Dr. Nye, we've marked as **Exhibit 9** a demonstrative document that I understand you created to accompany your testimony today, do you have that?

A. Yes, I do.

Q. What is **Exhibit 9**?

A. As we discussed earlier, Ms. Allen's effort to disprove that the October 25, 2019 corrective disclosure shows any price impact from the alleged misstatements is based upon her suggestions that (1) all analysts explicitly attributed Apache's October 25, 2019 price decline to investor concern over Suriname and (2) there was no new news about Alpine High. Although I cover the disabling flaws in these arguments in detail in my Reply Report, I thought it would be helpful to excerpt some of the analyst and news commentary issued in response to Mr. Keenan's resignation to demonstrate that Ms. Allen is wrong. So, this Exhibit excerpts the analyst and news commentary included in paragraphs 38 and 39 of my Reply Report covering Keenan's resignation.

We have discussed some of this earlier. My intraday analysis refutes Ms. Allen's suggestion that investor concern over Suriname is what caused the statistically significant decline in the price of Apache common stock on October 25, 2019. But, if we look at some of the analyst and news commentary on **Exhibit 9**, we see that it likewise refutes Ms. Allen's claim that there was no news about Alpine High released on October 25, 2019. For example, relating to Ms. Allen's suggestion that Keenan's resignation revealed nothing new about Alpine High,

Credit Suisse reported that Alpine High's poor performance was "***likely a cause for Mr. Keenan's resignation***." Similarly, in addition to stating "***[w]e do not believe the departure is linked to the results of***" Suriname, SunTrust Robinson Humphrey's October 25, 2019 report reasoned from Keenan's departure that "***Apache will soon signal a strategic shift away from Alpine High***," which certainly relates to, and indeed directly undermines, the notion that Alpine High would drive shareholder value for years to come. So too does the RBC analyst's comment in response to Keenan's resignation that "***we expect that APA could allocate activity away from Alpine [H]igh***."

News reports also connect Keenan's resignation to Alpine High, including by referencing certain of the misstatements that Defendants made when announcing the play on September 7, 2016. For example, *Reuters* reported on October 25, 2019, that "***Keenan is widely credited with the Alpine High find in West Texas in 2016. When Alpine High was discovered Apache's shares spiked as much as 14% with Chief Executive Officer John Christmann calling it a 'world class resource***.'"

Of course, this is all against the backdrop that Keenan, the Apache executive that the Company and market participants repeatedly credited with overseeing the "***transformational discovery***" of Alpine High, was out the door. Keenan's resignation had clear negative implications for the play that Defendants repeatedly claimed would drive future shareholder value. In this regard, all of the substantive analyst commentary that I have seen surrounding Keenan's resignation directly connected Keenan to Alpine High while referencing the play's poor results.

Q. Can you please summarize the analyst and news commentary reflected at paragraph 40 of your Reply Report?

A. Yes. Given Ms. Allen's assertion that Keenan's sudden resignation ignited

speculative investor concerns over Suriname, I present information showing how the Company and the market, instead, directly connected Keenan to Alpine High, both before and after his resignation.

Q. In your Reply Report, do you reference any other information that, in your opinion, demonstrates that Ms. Allen cannot disprove price impact based upon the October 25, 2019 corrective disclosure?

A. Yes. As we just discussed, Keenan was the public face of Alpine High, and Defendants repeatedly held him out as such. For example, in paragraph 40 of my Reply Report, I include information from the May 11, 2017 Apache Annual Shareholders Meeting, where Keenan was given the Apache President's award for his work on Alpine High, during which Christmann claimed about Keenan: "***he and his team have made a significant discovery at Alpine High. It's a field that will deliver incredible value to Apache and its shareholders for many, many years to come***." Given this, investors would easily draw negative conclusions about Alpine High based upon Keenan's sudden and unanticipated departure, without Apache naming a successor to oversee Alpine High.

Q. Anything else?

A. Yes. As a common sense point, I note, consistent with Plaintiffs' allegations in this case, the close temporal proximity between the results of Project Neptune, available in mid-October 2019, and Keenan's resignation less than 2 weeks later. I also note an internal Project Neptune document, dated October 14, 2019, which I understand called directly into question the Company's public representations concerning Alpine High to date. So, while the factual record to date reflects that Mr. Keenan's resignation had nothing to do with Suriname, it strongly supports that his resignation was based upon Alpine High's poor results, which the internal Project Neptune document suggests may have been even worse than publicly represented.

Q. Are you aware of any efforts that Ms. Allen has made to support her suggestion that the entirety of the price decline in Apache common stock on October 25, 2019 was caused by investor concern over Apache's efforts in Suriname?

A. No. Ms. Allen has done nothing to support an argument that investor concern over Apache's efforts in Suriname caused the entirety of the October 25, 2019 decline in Apache's stock price. Because she conducts no economic analysis to support such a notion, she falls far short of proving that the price decline in response to the October 25, 2019 disclosure of Keenan's resignation is evidence that the alleged misstatements during the Class Period had no impact upon Apache's common stock price.

**D. <u>March 16, 2020</u>**

Q. On what date was the third of the three alleged corrective disclosures during the Focus Period that Ms. Allen contends does not demonstrate that Defendants' misstatements during the Class Period had any price impact?

A. March 16, 2020.

Q. Where, in your Reply Report, do you address Ms. Allen's arguments that the March 16, 2020 corrective disclosure evidences no price impact from Defendants' misstatements during the Class Period?

A. I address Ms. Allen's points about the March 16, 2020 corrective disclosure in Section VIII of my Reply Report, which runs from paragraph 44 through paragraph 52.

Q. What was announced on March 16, 2020?

A. Prior to market open, *Seeking Alpha* issued a report on Apache revealing that, in the wake of a commodity price crash, enormous spending, and lack of production from Alpine High, Apache was uniquely challenged among its independent E&P peers. The analyst calculated that Apache's debt-to-equity ratio was "***the highest among all large-cap independent***

***oil and gas producers***." In this regard, the *Seeking Alpha* report specifically remarked on Apache's "***weak balance sheet marked by high levels of debt, which limits the company's ability to use additional borrowings to fund a cash flow shortfall***."

Consistent with Plaintiffs' loss causation allegations in paragraphs 315-16 of the Complaint, also pre-market on March 16, 2020, Susquehanna Financial Group issued a report in which it downgraded its rating for Apache from Positive to Neutral. Susquehanna also slashed its price target for the Company from $35.00 to $9.00, and stated that the rating downgrade was "***primarily governed by our view on balance sheet flexibility***." Susquehanna added that "***balance sheet flexibility is a main parameter in our stock selection process with factors such as inventory depth, capital intensity, and valuation still playing an important role in the calculus***." Consistent with the *Seeking Alpha* article also published on March 16, 2020, Susquehanna estimated that Apache's "Net Debt/EBITDA" ratio for 2020 and 2021 would be 5.6x and 4.8x, respectively, both of which were the highest among the "***International/Diversified E&Ps***."

Q. What connection, if any, did the information released on March 16, 2020 have to Alpine High?

A. Apache's uniquely high debt-to-equity ratio and lack of balance sheet flexibility resulted from its considerable capital spending on Alpine High, from which Apache generated little or no appreciable value. These circumstances led Susquehanna to downgrade and reduce its price target for Apache.

Q. To what Class Period misstatements, if any, did the information revealed on March 16, 2020 relate?

A. The information revealed on March 16, 2020 related to Defendants' repeated representations throughout the Class Period that Alpine High was a "***world class***" resource and a

transformational discovery that would drive shareholder value for many years, including "***free cash flow for decades to come***." It also related to a statement that Defendants made on February 23, 2017, alleged in paragraph 223 of the Complaint, representing that Alpine High "***puts Apache in one of the most exciting and competitive positions in the industry***," as well as a substantially similar statement that Defendants made on May 11, 2017, alleged in paragraph 239 of the Complaint, representing that "***Alpine High brings us decades of inventory. It puts Apache in one of the most exciting and competitive positions in the industry***." Additionally, the March 16, 2020 corrective information related to a statement that Apache included in its Form 10-K for 2017 alleged at paragraph 258 of the Complaint, representing that "***Alpine High is anticipated to generate strong cash margins and a competitive recycle ratio when compared to other Permian operations***." The information disclosed on March 16, 2020 revealed quite the opposite, which is that Alpine High had severely constrained Apache relative to its E&P peers, limiting its balance sheet flexibility and calling into question Apache's ability to continue as a going concern, particularly in the lower commodity price environment.

Q. What response, if any, did Apache's stock price have to the information revealed on March 16, 2020?

A. As set forth in paragraph 46, footnote 174 of my Reply Report, the abnormal negative returns for Apache common stock that I calculated for March 16 and March 17, 2020 in connection with preparing my Reply Report are statistically significant at the 100% and 99.99% confidence levels, respectively.

Q. What response, if any, did Ms. Allen observe in the price of Apache common stock to the information about Apache revealed on March 26, 2020?

A. As I set forth in paragraph 46, footnote 174 of my Reply Report, under Ms. Allen's "Alternative Event Study" addressed in the Allen Report, the abnormal negative

return that she found for Apache common stock on March 16 and March 17, 2020 is statistically significant at the 100% confidence level for both days.

Q. Was any other Apache-specific value-relevant information released on March 16-17, 2020?

A. No, I am not aware of any such news. And, as I state in paragraph 50 of my Reply Report, Ms. Allen is similarly unable to identify any news other than what was conveyed by *Seeking Alpha* and Susquehanna that could explain the statistically significant declines in the price of Apache common stock on March 16-17, 2020.

Q. In the Allen Report, what does Ms. Allen say about the March 16, 2020 corrective disclosure?

A. Ms. Allen makes three main arguments to support her attempt to prove that the March 16, 2020 corrective information does not show that the alleged misstatements during the Class Period had any price impact. Specifically, as set forth in paragraph 46 of my Reply Report, Ms. Allen contends that: (1) no analyst or news story mentioned the *Seeking Alpha* article or tied it to the decline in the price of Apache common stock; (2) the *Seeking Alpha* article contained no new news about either Apache or Alpine High; and (3) her and my event study results for March 16-17, 2020 are inapplicable because of increased market volatility on those days.

Q. Taking those arguments one at a time, do you have a response to Ms. Allen's contention that the information revealed on March 16, 2020 shows no price impact because "***no analyst or news story mentioned the Seeking Alpha article, let alone tied it to any price drop***"?

A. Yes. As I set out in paragraph 47 of my Reply Report, and as I've mentioned previously, on March 16, 2020, securities analyst firm Susquehanna issued a report downgrading its rating for Apache and slashing its price target for the Company. Like the *Seeking Alpha*

article, Susquehanna reported on Apache's unique financial constraints, noting, among other things, Apache's lack of balance sheet flexibility and excessive net leverage. The Susquehanna analyst did not mention the *Seeking Alpha* report, but it was consistent with it.

Q. Do you have a response to Ms. Allen's contention that there was "***no new news***" released about Apache or Alpine High on March 16, 2020?

A. Yes, as I make clear in paragraph 47 of my Reply Report, the downgraded investment recommendation, severely reduced price target, and revised Net Debt / EBITDA ratio projection set forth in the Susquehanna report, based upon financial information substantially similar to that set forth in the *Seeking Alpha* article, was new information about Apache released on March 16, 2020.

Q. Do you have a response to Ms. Allen's contention that "***both Dr. Nye's event study model and the alternative event study model are not applicable to [March 16, 2020] due to increased market volatility***"?

A. Yes, I set forth my response to that point in paragraphs 48-50 of my Reply Report. In summary, it was insufficient and unscientific for Ms. Allen to conclude that the market was too volatile on March 16, 2020 to conduct any statistical tests, particularly if she is trying to demonstrate that the corrective information released on March 16, 2020 caused no portion of the statistically significant price declines in Apache common stock on March 16-17, 2020. In the Allen Report, Ms. Allen made no effort whatsoever to control for the volatility that she noted, while positing that neither my event study nor hers produced reliable statistical results for March 16-17, 2020. I found this remarkable, given that there is academic literature that directly addresses how to design event studies to reliably control for periods of heightened market-wide and industry-wide volatility.

In response, I consulted the very academic literature that Ms. Allen apparently

elected to ignore when preparing the Allen Report. In particular, I was guided by literature prepared by Ms. Allen's colleagues at NERA, which advises, among other things, that "***[t]he simplest way to resolve the issues associated with performing an event study over a period of heightened volatility would be to use the disclosure period as the estimation period. One can 'overlap' the estimation and the disclosure period, by construction guaranteeing similar volatilities between the two periods***."

As a result, in my Reply Report, I modified the estimation period, as the NERA authors suggest, to overlap with the heightened market volatility due to the Covid pandemic during March 2020. Upon implementing that control for the market volatility that Ms. Allen incorrectly claims prevents any reliable statistical testing, I note that the two-day Company-specific return on March 16 and 17, 2020 remains statistically significant above the 95% confidence level. Notably, this is true whether one uses the market and industry indices used in my Initial Report, or the market and industry indices employed by Ms. Allen in the Allen Report. It is also true across a range of control period lengths, as reflected in the table I include in paragraph 59 of my Reply Report.

Q. Dr. Nye, based upon the literature that you consulted, do you believe that you designed and conducted an event study to control for the market volatility at the time of the March 16, 2020 corrective disclosure that Ms. Allen noted?

A. Yes, absolutely.

Q. Do you believe the results of the event study that you conducted to control for the market volatility that Ms. Allen noted at the time of the March 16, 2020 corrective disclosure are reliable?

A. Yes, I do. I believe that I correctly executed the adjustments to the control period, or estimation period, that the NERA authors suggested. I know that in her Surreply Report, Ms.

Allen offers some criticism of the methodology that I selected, and I am happy to discuss that in the context of Ms. Allen's Surreply.

Q. Based upon your review of the Allen Report, does Ms. Allen express a view on whether *Seeking Alpha* is a source of value-relevant information for investors?

A. I don't read Ms. Allen's commentary in the Allen Report as offering a formal opinion on the issue, but she does appear to discredit or discount the possibility that *Seeking Alpha* can serve as a reliable source of new, value-relevant information. In this regard, Ms. Allen contends that, "***unlike analyst reports that are issued by professional financial analysts at brokerage firms, Seeking Alpha is a provider of crowdsourced content and not a 'licensed securities dealer, broker or US investment adviser or investment bank.***'" Despite those remarks in the Allen Report, Ms. Allen testified at her July 27, 2023 deposition in this case, as reflected at page 182 of the transcript, that she does not dispute that *Seeking Alpha* articles can "***contain new or relevant information about a company***" and can "***provide evidence of price impact***."

Q. Do you have a view on whether *Seeking Alpha* can convey value-relevant information about an issuer to investors?

A. Yes. In an efficient market, like the one for Apache common stock during the Class Period that I've concluded, without challenge, existed here, all public information is incorporated into the market price of a security. By definition, that includes information that *Seeking Alpha* disseminates. Moreover, I understand that courts have recognized that *Seeking Alpha* can publish information that demonstrates price impact at the class certification stage of a case, like this one, alleging claims under the anti-fraud provisions of the federal securities laws. In footnote 191 of my reply report, I cite a recent decision in the *Acadia Healthcare* case, in which the court rejected a similar attempt to discredit price impact associated with information

that *Seeking Alpha* published, and certified the proposed class, while concluding that defendants failed to prove a lack of price impact as to the *Seeking Alpha* article at issue there.

**E. <u>Ms. Allen's "Big Picture Analysis"</u>**

Q. Dr. Nye, can you please describe what you set forth in Section IX of your Reply Report, which runs from paragraph 53 through paragraph 60?

A. Yes. In Section IX of my Reply Report, I respond to Ms. Allen's so-called "Big Picture Analysis," pursuant to which Ms. Allen offers supposition designed to support her opinion that there is no evidence that the alleged misstatements during the Class Period had any impact on the price of Apache common stock during the Focus Period.

Q. How, if at all, does Ms. Allen use her "Big Picture Analysis" to try to support her opinion that none of the alleged misstatements during the Class Period had any price impact during the "Focus Period"?

A. Ineffectively. As I testified earlier, Ms. Allen's so-called "Big Picture Analysis" is premised upon her very narrow view of Plaintiffs' allegations in this case as limited to claims that Alpine High was more gassy and contained less oil than Defendants claimed. So, I really view this analysis as an irrelevant side show.

Despite these obvious shortcomings, Ms. Allen claims that her so-called "Big Picture Analysis" supports her opinion that none of the misstatements that Defendants made concerning Alpine High during the entire Class Period had any price impact at all during her Focus Period because, during the Focus Period: (1) "***there was no change in the market's expectations about Alpine High's reserves or the mix of oil and wet gas vs. dry gas***," and that "***analysts maintained their view that Alpine High was a gas-weighted, NGL-rich play***"; (2) "***Apache's stock moved in-line with the E&P industry during the Focus Period***"; and (3) "***downward changes in expectations of Alpine High, including decisions to reduce***

***production and drilling, were due to changes in commodity prices during the Focus Period and were not in relation to any new understanding of the reserves or reserve mix at Alpine High***."

Q. If you turn to paragraph 60 in your Reply Report, can you please describe what you discuss there?

A. Yes. In paragraph 60, I summarize my responses to Ms. Allen's "Big Picture Analysis".

Q. So, your first point in paragraph 60 is that Ms. Allen's "Big Picture Analysis" fails to support her claim that the alleged misstatements lacked price impact because "***Apache's stock price decline far exceeded the decline in the industry (if any) on each of the alleged corrective disclosure dates during the Focus Period***," do you see that?

A. Yes, I do.

Q. Can you explain that point?

A. Sure. So, as I testified earlier, one of Ms. Allen's points as to why her "Big Picture Analysis" supposedly supports her arguments that the alleged misstatements during the Class Period had zero price impact during her Focus Period is that Apache's common stock price moved in line with the entire E&P industry during that time. This claim is misleading, at best.

For starters, my opinion that Apache common stock traded in an efficient market during the Class Period is uncontested. Accordingly, immediately preceding each of the five corrective disclosures that Plaintiffs allege occurred during the Class Period, Apache's efficient stock price would have already reflected the changing industry dynamics that Ms. Allen identifies during the Focus Period, including the observed decline in commodity prices, as well as revised analyst expectations concerning Apache's prospects for reasons unrelated to the alleged fraud. As a corollary, market efficiency dictates that the price declines observed

following each of the alleged corrective disclosures must have been in response to incremental, new information revealed on those days alone. If Ms. Allen were correct that "***Apache's stock moved in-line with the E&P industry during the Focus Period***," then one would expect to see Apache's stock price declining in tandem with other stocks in the E&P industry on the corrective disclosure dates. However, this is simply not the case. In paragraph 54 of my Reply Report, I include a table showing that Apache's stock price declines far exceeded the decline in the industry, if any, on each of the alleged corrective disclosure dates during the Class Period, including those during Ms. Allen's Focus Period.

Additionally, even assuming that value-relevant information concerning the E&P industry or the broader stock market was released contemporaneously with the Apache-specific corrective disclosures during the Class Period, both my and Ms. Allen's regression models are designed to control for such effects. That is because our regression models include control variables for broad stock market effects and the E&P industry in particular, thereby allowing us to remove such contemporaneous influences from our estimates of Apache's Company-specific stock price return in response to the alleged corrective disclosures. In paragraph 55 of my Reply Report, I present a table depicting that, rather than moving in line with the E&P industry, both my and Ms. Allen's regression models estimate that Apache's stock price decline far exceeded what our models predicted should have occurred given changing market and industry dynamics on each of the alleged corrective disclosure dates during the Class Period.

Finally, in an efficient market, like the one for Apache common stock established here, one would expect Apache's common stock price to be correlated with the publicly traded common shares of other companies in the E&P industry, including during changes in commodity prices. Given that E&P companies generate cash flows by selling natural gas, crude oil, and/or natural gas liquids, it should be the case that their stock prices are mutually dependent on the

prevailing market prices for such commodities. However, the notion that, during the Focus Period, Apache's stock price was suddenly more "***in-line with the E&P industry***," is demonstrably incorrect. In paragraph 56, I present a table demonstrating that not only was Apache's stock price highly correlated with the E&P industry throughout the entire Class Period, but its daily returns exhibited virtually the same ~75% correlation during both the Focus Period and the Pre-Focus Period.

Q. Your second point in paragraph 60 is that Ms. Allen's "Big Picture Analysis" fails to support her claim that the alleged misstatements lacked price impact because "***both my and Ms. Allen's regression models estimate that Apache's stock price decline far exceeded what our models predicted should have occurred given changing market and industry dynamics on each of the alleged corrective disclosure dates during the Focus Period***," do you see that?

A. Yes, I do.

Q. Can you explain that point?

A. Yes. Really, that point is covered by my prior answer. As I testified, both my and Ms. Allen's regression models are designed to control for changing market conditions and industry dynamics. In this regard, each of our regression models includes control variables for broad stock market effects and the E&P industry in particular, thereby allowing us to remove such contemporaneous influences from our estimates of Apache's Company-specific stock price return in response to the alleged corrective disclosures. The table I present in paragraph 55 of my Reply Report shows that, rather than moving in line with the E&P industry, both my and Ms. Allen's regression models estimate that Apache's stock price decline far exceeded what our models predicted should have occurred given changing market and industry dynamics on each of the alleged corrective disclosure dates during the Class Period.

Q. Your third point in paragraph 60 is that Ms. Allen's "Big Picture Analysis" fails

to support her claim that the alleged misstatements lacked price impact because "***Apache's stock price exhibited approximately the same level of daily return correlation with the E&P industry throughout the entire Class Period***," do you see that?

A. Yes, I do.

Q. Can you explain that point?

A. Sure. I also covered this in my earlier answer. In short, the table I present in paragraph 56 of my Reply Report demonstrates that not only was Apache's stock price highly correlated with the E&P industry throughout the entire Class Period, but its daily returns exhibited virtually the same ~75% correlation during both the Focus Period and the Pre-Focus Period.

Q. Your fourth and final point in paragraph 60 is that Ms. Allen's "Big Picture Analysis" fails to support her claim that the alleged misstatements lacked price impact because "***Ms. Allen's contention that the decline in Apache's stock price during her Focus Period was entirely driven by changes in the E&P industry is contradicted by the Company's own internal analysis***," do you see that?

A. Yes, I do.

Q. Can you explain that point?

A. Sure. I address this point in paragraphs 57 and 58 of my Reply Report, where I discuss an internal Apache document generated for the Company's board in January 2020.

Q. Dr. Nye, we've marked as **Exhibit 10**, a document entitled "5 Year Lookback on APA Performance With Primary Focus on Alpine High," do you have that?

A. Yes, I do.

Q. Is **Exhibit 10** a copy of the document that you discuss in paragraphs 56 and 57 of your Reply Report?

A. Yes, it is.

Q. Why do you discuss this document, **Exhibit 10**, in those paragraphs of your Reply Report?

A. Really because Apache's own analysis, prepared for the Apache Board of Directors during the Class Period, refutes Ms. Allen's suggestion that the price movement in Apache common stock was driven by issues impacting the E&P industry as a whole. The key findings from the Company's own January 2020 analysis demonstrate that Alpine High was the leading driver of Apache's stock price performance, both positive and negative, during the preceding five years.

Among other things, the 5-Year Lookback concludes that, in the preceding five years, "***Alpine high resulted in a significant loss of $2-3 billion, or $6.00-$8.00 per share***." Moreover, refuting Ms. Allen's suggestion that Apache's stock price moved in line with the E&P industry, Apache's own analysis, which Ms. Allen did not consider, shows that Apache's share price suffered steeper declines than the stock prices of its peers. Specifically, Apache concluded that its share price underperformed in two distinct periods during the preceding five years, and that Alpine High was the cause in each instance. When excluding the positive price impact that Apache determined was attributable to its discovery in Suriname, the Company concluded that "***average annual Shareholder returns of -16% absolute and -9% relative to our TSR Peers***."

Q. What does the graph appearing in paragraph 59 of your Reply Report depict?

A. This graph comes directly from Apache's internal analysis – the Five-Year Lookback that is **Exhibit 10**. As you can see, the Company plotted its own stock price performance over the average of the stock price performance of what Apache identified as its "***TSR Peers***." According to the legend at the bottom of the graph, Apache's "TSR Peers" are: APC, which is Anadarko Petroleum Corporation; CHK, which is Chesapeake Oil; DVN, which

is Devon Energy Corporation; ECA, which is Encana Corporation; HES, which is Hess Corporation; MRO, which is Marathon Oil Company; MUR, which is Murphy Oil corporation; NBL, which is Noble Energy; OXY, which is Occidental Petroleum Corporation; and PXD, which is Pioneer Natural Resources Company.

Looking at the graph, you can see how Apache's stock price underperformed that of its peer group during Ms. Allen's Focus Period, which is the time period during which Ms. Allen contends that Apache's stock price movement can be explained entirely by changes affecting the E&P industry as a whole. Her position is incorrect, and is also inconsistent with the Company's own analysis.

## V. MS. ALLEN'S SEPTEMBER 8, 2023 SURREPLY REPORT

Q. Dr. Nye, are you aware that Ms. Allen provided a Surreply Report in this matter on September 8, 2023?

A. Yes.

Q. Have you reviewed Ms. Allen's Surreply Report?

A. Yes, I have.

Q. Can you describe the extent of your review of Ms. Allen's Surreply Report?

A. Sure. I reviewed Ms. Allen's Surreply Report in advance of my November 8, 2023 deposition in this case to be familiar with its contents. Since my deposition, I have continued to critically review the Surreply Report in order to answer questions about it at this evidentiary hearing.

Q. Did you receive certain back-up materials reflecting some of the work underlying the opinions Ms. Allen expresses in her Surreply Report?

A. Yes, we did.

Q. What did you receive?

A. We received the news articles, analyst reports, and SEC filings Ms. Allen considered in writing her Surreply Report, as well as the computer code, input data, and output files underlying her quantitative analyses.

Q. What, if anything, did you do with those materials?

A. We utilized Ms. Allen's backup materials to test and replicate the event study volatility controls that she claimed to apply when measuring Apache's price response on March 16-17, 2020 to the March 16, 2020 corrective disclosure. As I mentioned during my deposition testimony, I thought it suspicious that Ms. Allen criticized the volatility controls that I applied in my Reply Report, contended that there were better ways to control for volatility, claimed to do so, but then did not present the results in her Surreply Report. When replicating her analyses, the price decline for Apache common stock on March 16, 2020 is statistically significant at above the 90% level and the two day decline for March 16-17, 2020 is statistically significant at the 97% confidence level, regardless of whether you implement either of the alternative methods proposed by the NERA paper to control for increased market volatility on a specific date.

Q. Ok, we can discuss that a bit more in the context of the final corrective disclosure. Were you questioned on Ms. Allen's Surreply Report at your November 8, 2023 deposition in this case?

A. Yes, I was asked a few questions about the contents of Ms. Allen's Surreply Report. It was not really an area of focus during the deposition, if I recall correctly, and the questions I was asked were actually quite limited.

Q. During your deposition in this case, did you answer the questions you were asked about the Surreply Report to the best of your ability at that time?

A. Yes. I did.

Q. Dr. Nye, do you stand behind the testimony that you gave in this case during your November 8, 2023 deposition concerning the Surreply Report?

A. Yes. I do.

Q. Subsequent to the testimony you gave at your November 8 deposition in this case, did you continue to review Ms. Allen's Surreply Report?

A. Yes. As I mentioned earlier, I've continued to review Ms. Allen's Surreply in preparation for this class certification evidentiary hearing.

Q. Is **Exhibit 11**, which I just handed to you, a copy of Ms. Allen's September 8, 2023 Surreply Report?

A. Yes. It appears to be.

Q. Does Ms. Allen's Surreply Report respond to the opinions you expressed in your August 11, 2023 Reply Report?

A. She says that it does, and I understand that was her assignment. There are certain portions of my Reply Report, however, that Ms. Allen appears to just ignore in her Surreply. For example, I conducted an intraday analysis of Apache's stock price movement on October 25, 2019 to test Ms. Allen's contention that the movement in Apache's stock price that day was caused by investor concern over Suriname. I believe my intraday analysis shows that Ms. Allen is incorrect on that point. Yet, in her Surreply, Ms. Allen does not say a single word about Apache's intraday price movement on October 25, 2019. Thus, she cannot credibly contend that the October 25, 2019 announcement of Steve Keenan's resignation from Apache demonstrates that the alleged Class Period misstatements had zero price impact.

Q. Is there anything within the Surreply Report that has caused you to change the opinions you expressed in the reports that you have provided in this case?

A. No.

Q. After your review of the Surreply Report, do you continue to stand by the entirety of the opinions you expressed in the reports that you have provided in this case?

A. Yes.

**A. Ms. Allen Continues to View Plaintiffs' Claims Too Narrowly**

Q. If you turn to paragraph 5 of the Surreply Report, do you see where Ms. Allen quotes the Introduction to the Complaint in this matter, claiming that Plaintiffs allege: "***the Alpine High area was too heavy on unprofitable 'dry' gas and too light on valuable oil and 'wet' gas***"?

A. Yes. I see that.

Q. Based upon your work in this matter, is that a fair characterization of what Plaintiffs allege Defendants misrepresented or concealed during the Class Period?

A. No, it's not. To support the Focus Period construct to which Defendants' counsel asked Ms. Allen to restrict her analysis, Ms. Allen continues to view the alleged misstatements in this case and Plaintiffs' claims far too narrowly. As in the Allen Report, Ms. Allen ignores in her Surreply Report Defendants' repeated representations that Alpine High was a "***world class resource play***" and a "***transformational discovery***" that would "***deliver significant value for our shareholders for many years***" and "***drive incremental growth and returns for years to come***." Ms. Allen's narrow view of Plaintiffs' allegations also causes her, despite her claims to the contrary, to inadequately consider Defendants' claims that Alpine High would perform well economically "***even if oil or gas prices fell substantially***," including Defendant Christmann's September 7, 2016 statement that Alpine High was a "***very wet gas resource***" in which Apache was "***virtually going to get the [dry] gas for free***." Ms. Allen's constrained view of this case also causes her to inadequately consider that, the day before her Focus Period begins, Defendants reiterated a number of the Alpine High misstatements, including the claims that "***at Alpine High,***

***we are building out a world-class resource play that will change the course of Apache*"** and that Alpine High would "***drive capital investment, and very soon, free cash flow for decades to come***." Also on February 22, 2018, Defendants claimed that Alpine High "***is going to really hum below $2 on the gas side***" and that "***[w]e would not be making this type of investment on the midstream or the upstream side if we thought there was a sensitivity that was close to anything that would come into not making it work under very, very low gas and NGL and oil prices***."

So, Ms. Allen's characterization of the alleged misstatements in paragraph 5 of her Surreply Report is demonstrably incomplete.

Q. What bearing, if any, do you believe Ms. Allen's characterization of Plaintiffs' claims has on the opinions that she offers in the Surreply Report?

A. I believe that Ms. Allen's election to base all of her opinions on an overly narrow and demonstrably incomplete view of the alleged misstatements here invalidates her opinions. Consistent with her apparent assignment, Ms. Allen opines that none of the alleged misstatements made during the entire Class Period had any price impact at all during her Focus Period. To render such an opinion, however, Ms. Allen would have to consider *all* of the alleged misstatements made during the entire Class Period. Yet, she does not do that, and her price impact analysis is truly unreliable as a result. Indeed, she fails to fully examine the most critical input to her analysis – *all* of the alleged misstatements made during the entire Class Period – thereby invalidating her claims that none of the alleged misstatements had any price impact during her Focus Period.

Additionally, only by mistakenly viewing the Class Period misstatements in this case as addressing nothing more than the relative oil and gas content of Alpine High does Ms. Allen try to breathe relevance into Defendants' counsel's Focus Period construct and her so-

called "Big Picture Analysis," both of which are flawed, and remain flawed, for the reasons I've already mentioned.

**B. Ms. Allen Continues to Ignore Defendants' Representations that Alpine High Would Thrive Even Amid Very Low Commodity Prices**

Q. In paragraph 10 of the Surreply Report, Ms. Allen states, in part, that she: "***explicitly analyzed the alleged misrepresentations pertaining to the economics of Alpine High at low commodity prices and found that the market was aware before the Focus Period began that deteriorating commodity prices would drive expectations about Alpine High downward***," do you see that?

A. Yes, I see it. And, while analysts may have come to a conclusion that lower commodity prices would affect Apache's economic performance, it is wholly unremarkable to recognize that lower commodity prices would reduce the revenues that Apache could derive from Alpine High. It would also reduce profitability, assuming production costs did not somehow decrease. But, this dynamic really puts a fine point on why Defendants' repeated representations that Alpine High would perform well at very low commodity prices had price impact during the Focus Period. Ms. Allen's observation that analysts recognized that lower commodity prices would, as she says, "***drive expectations about Alpine High downward***," is a far cry from the inferential leap that Ms. Allen makes, which is that the market "***fully expected***" the deferral of gas production at Alpine High, announced on April 23, 2019, as she testified, which is reflected at page 132 of her July 27, 2023 deposition transcript. Indeed, the fact that Defendants had publicly stated that Alpine High would still be profitable at very low commodity prices is what makes the deferral an unexpected negative event.

Q. In paragraphs 11 and 12 of the Surreply Report, Ms. Allen claims that she evaluated the alleged commodity price misstatements made on February 23, 2017 and February

22, 2018 and found no price impact from either alleged misstatement, do you see that?

A. Yes. I do.

Q. Based upon your review of the Surreply Report, what is your understanding of the evidence that Ms. Allen enlisted to support her conclusion that there is no price impact from the alleged misstatements concerning commodity prices on February 23, 2017 and February 22, 2018 that she discusses in paragraphs 11 and 12 of the Surreply Report?

A. The primary reason that Ms. Allen provides in support of her opinion that there is no price impact from alleged misstatements concerning commodity prices on February 23, 2017 and February 22, 2018 is, as she states in her Surreply Report at paragraph 11, corresponding to the February 2017 misstatement, and at paragraph 12, corresponding to the February 2018 misstatement: "***not one analyst mentioned or incorporated this alleged misstatement into their valuation of Apache***." I don't believe this observation supports Ms. Allen's claims at all.

Remember, Ms. Allen ignores the alleged misstatements that Defendants made when announcing Alpine High on September 7, 2016 – the announcement that caused three straight days of statistically significant increases in the price of Apache common stock. Among the statements that Defendants made on September 7, 2016 were claims that Alpine High would perform well at very low commodity prices, including that "***if you look at the rates of return, they go off the charts,***" and "***you've got a gas resource, a very wet gas resource. We're virtually going to get the gas for free***."

In response to Defendants' September 7, 2016 misstatements about Alpine High, securities analysts did, in fact, report on the economics of Alpine High. I cite some of that commentary in paragraph 13 of my Reply Report, which is also reflected in **Exhibit 6** to my testimony today that we discussed earlier. So, for the February 23, 2017 and February 22, 2018 misstatements that Ms. Allen discusses in her Surreply Report, it is not surprising that securities

analysts did not report on Defendants' reiteration of Alpine High's putative economics at low commodity prices. Although Ms. Allen overlooks it because she ignores the Pre-Focus Period, these later misstatements are confirmatory of Defendants' September 7, 2016 misstatements. Confirmatory misstatements do not impact the price of a security trading in an efficient market, and there would be little reason for securities analysts to report on such confirmatory misstatements each time that Defendants repeated them during the Class Period.

Q. Sticking with the statements that Defendants made on September 7, 2016 addressing the economics of Alpine High and how it would perform in a very low commodity price environment, we've marked as **Exhibit 12** a copy of a document dated September 7, 2016 and entitled, "Edited Transcript: APA – Apache Corp. at Barclays CEO Energy-Power Conference," do you have that?

A. Yes. I have that, thank you.

Q. Dr. Nye, in connection with preparing the reports that you have issued in this case, have you had an opportunity to review the Barclays Conference transcript that we have marked as **Exhibit 12**?

A. Yes. As this document records many of the false or misleading statements that Plaintiffs allege Defendants made when announcing Alpine High, I have reviewed this transcript.

Q. Can you please direct me to where in the Barclays Conference transcript, which we've just marked as **Exhibit 12**, Defendants made statements addressing how Alpine High would perform in a low commodity price environment?

A. Yes. So, in particular, I note Defendant Christmann's statements appearing at page 7 of **Exhibit 12**, where he says: "***If I go down to the economics at $50 WTI and $3 Henry Hub, the PV10 just off these scoping economics, and these are fully burdened, not just wellhead economics, you see a PV10 of $4 million to $20 million, tremendously economic.***

***And if you look at the rates of return, they go off the charts. The break-even gas price, $0.40 to less than $0.10. We run it at $40 and $2.50. You don't lose a lot. It just gets back to how prolific it is. $2 million to $15 million of PV10. The returns are still significantly high, and the breakeven gas price barely moves. It goes to $0.60 in the low case, for the normal pressured areas, still less than $0.10. So, you've got a gas resource, a very wet gas resource, where you're virtually going to get the gas for free.***"

Q. In your prior testimony today, do you recall saying that securities analysts did, in fact, report on the economics of Alpine High when issuing reports addressing the representations that Defendants made about Alpine High on September 7, 2016?

A. Yes, I recall saying that. The securities analysts that I recall issuing reports on or around September 7, 2016 addressing Alpine High's performance at low commodity prices are, among others, Credit Suisse, Morgan Stanley, Seaport Global, Wells Fargo, and Société Générale.

Q. Dr. Nye, we've marked as **Exhibit 13** a copy of a September 7, 2016 report on Apache issued by Credit Suisse, do you have that?

A. Yes.

Q. Have you previously seen a copy of this September 7, 2016 Credit Suisse report?

A. Yes. I have, and I referenced it in my prior answer.

Q. Can you please direct us to where in the September 7, 2016 Credit Suisse report the analyst reports on the economics of Alpine High at low commodity prices?

A. Yes. That discussion appears in Figure 10 on page 7 of the report, where the analyst, among other things, includes the breakeven gas prices for Alpine High under certain assumptions.

Q. Dr. Nye, we've marked as **Exhibit 14** a copy of a September 8, 2016 report on

Apache issued by Morgan Stanley, do you have that?

A. Yes.

Q. Have you previously seen a copy of this September 8, 2016 Morgan Stanley report?

A. Yes. I have, and I referenced it in my prior answer.

Q. Can you please direct us to where in the September 8, 2016 Morgan Stanley report the analyst reports on the economics of Alpine High at low commodity prices?

A. Yes. That discussion appears on pages 3-4 of the report, where the analyst, among other things, includes the breakeven gas prices for Alpine High under certain assumptions, including in Exhibit 2 on page 4 of the report.

Q. Dr. Nye, we've marked as **Exhibit 15** a copy of a September 7, 2016 report on Apache issued by Seaport Global, do you have that?

A. Yes.

Q. Have you previously seen a copy of this September 7, 2016 Seaport Global report?

A. Yes. I have, and I referenced it in my prior answer.

Q. Can you please direct us to where in the September 7, 2016 Seaport Global report the analyst reports on the economics of Alpine High at low commodity prices?

A. Yes. That discussion appears on page 4 of the report, where the analyst, among other things, includes the breakeven gas prices for Alpine High under certain assumptions, while noting that "***APA's preliminary look at Alpine High economics look encouraging***."

Q. Dr. Nye, we've marked as **Exhibit 16** a copy of a September 8, 2016 report on Apache issued by Credit Suisse, do you have that?

A. Yes.

Q. Have you previously seen a copy of this September 8, 2016 Credit Suisse report?

A. Yes. I have. Credit Suisse issued reports on Apache on both September 7 and September 8, 2019.

Q. Can you please direct us to where in the September 8, 2016 Credit Suisse report the analyst reports on the economics of Alpine High at low commodity prices?

A. Yes. On the first page of the report, the analyst states: "***the key data released yesterday deserve another report. The key point inside is that the low clay content and excellent porosity is why the rocks are so productive in a lower pressure and hence lower cost environment – which in turn is why the economics look so compelling***." Then, if you turn ahead in the report to page 7, you will see that the analyst quotes a number of statements that Defendants made concerning Alpine High, including the last sentence in the first paragraph under the first bullet on that page, which says: "***What's going to make this play really stand out is the quality, the thickness, and the cost structure, very, very highly economic wet gas play***."

Q. Dr. Nye, we've marked as **Exhibit 17** a copy of a September 7, 2016 report on Apache issued by Wells Fargo, do you have that?

A. Yes.

Q. Have you previously seen a copy of this September 7, 2016 Wells Fargo report?

A. Yes. I have, and I referenced it in my prior answer.

Q. Can you please direct us to where in the September 7, 2016 Wells Fargo report the analyst reports on the economics of Alpine High at low commodity prices?

A. Yes. That discussion appears on pages 2 and 3 of the report, where the analyst, among other things, includes the breakeven gas prices for Alpine High under certain assumptions. Like the other analyst reports that we've discussed on this topic, Wells Fargo includes the breakeven gas prices that Apache presented in a September 7, 2016 slide deck

prepared for the Alpine High announcement.

Q. Dr. Nye, we've marked as **Exhibit 18** a copy of a September 8, 2016 report on Apache issued by Société Générale , do you have that?

A. Yes.

Q. Have you previously seen a copy of this September 8, 2016 Société Générale report?

A. Yes. I have, and I referenced it in my prior answer.

Q. Can you please direct us to where in the September 8, 2016 Société Générale report the analyst reports on the economics of Alpine High at low commodity prices?

A. Yes. That discussion appears on page 9 of the report, where the analyst, among other things, includes the breakeven gas prices for Alpine High under certain assumptions.

Q. In addition to analysts, did news media also report on the economics of Alpine High at low commodity prices in the wake of the September 7, 2016 announcement of Alpine High?

A. Yes, they did. I reference certain of those news media reports in paragraph 13 of my Reply Report.

Q. Dr. Nye, we've marked as **Exhibit 19** a copy of a September 9, 2016 article from the *Houston Chronicle* entitled, "*West Texas discovery puts Apache back in game; Strategy of aggressive exploration goes against grain, analysts say*," do you have that?

A. Yes.

Q. Have you previously seen a copy of this September 9, 2016 *Houston Chronicle* article?

A. Yes. I have, and I reference it in paragraph 13 of my Reply Report.

Q. Can you please direct us to where in the September 9, 2016 *Houston Chronicle*

article the author reports on the economics of Alpine High at low commodity prices?

A. Yes. That discussion appears on page 2 of the article, where the author, five lines up from the bottom of the page, states: "***The company said in a statement that Alpine High will prove to be 'incredibly economic even at today's low prices***.'"

Q. Is there anything else you'd like to say about Ms. Allen's assessment of analyst reports issued at or around the time of the alleged misstatements concerning commodity prices made on February 23, 2017 and February 22, 2018 that Ms. Allen discusses in paragraphs 11 and 12 of the Surreply Report?

A. Yes. I think Ms. Allen's discussion of these misstatements highlights how her opinions are critically dependent on a feigned ignorance of the positive price impact created by the September 7, 2016 misstatements. The February 2017 and February 2018 misstatements concerning Apache's performance at low commodity prices are confirmatory misstatements that maintained the positive price impact that the September 7, 2016 misstatements created. Looking only at analyst reports issued around those latter commodity price misstatements to try to disprove price impact is a superficial analysis, especially when considering that analysts are very unlikely to issue reports highlighting such confirmatory statements.

Q. If you look at paragraph 13 of the Surreply Report, do you see where Ms. Allen states that analysts, in fact, reported during the Focus Period that "***Alpine High would be negatively affected if prices dropped***"?

a. Yes. I see that.

Q. In your opinion, do those analyst views demonstrate that nobody believed Apache's representations that Alpine High would perform well even in a lower commodity price environment?

A. No. And, this is a key fallacy with Ms. Allen's interpretation of a number of the

analyst reports that she cites to try to support her claim that the market fully expected the April 23, 2019 announced deferral of natural gas production at Alpine High. She's mixing apples and oranges. What I mean by that is, of course, it would come as no surprise that Apache and its competitors would feel negative consequences, such as reduced revenues, from a downturn in gas prices. Indeed, given that commodity prices are publicly available online, Apache's efficient market price would have reflected the reduced expected profitability of the Alpine High play on a daily basis prior to April 23, 2019 and throughout the Class Period. That does not mean, however, that the market "fully expected" that Apache would respond by deferring large volumes of, if not substantially all, Alpine High natural gas production for an indeterminate period of time. While the nature of the E&P industry implies that Alpine High would be less profitable at lower commodity prices, Defendants' misstatements prevented the market from appreciating just how unprofitable Alpine High had become, thereby making the deferral a negative unexpected event.

Q. Still sticking with paragraph 13 of the Surreply Report, do you see that in the second sentence of footnote 16, Ms. Allen states: "***not one analyst repeated the September 7, 2016 alleged misstatement ('even at $40/barrel oil and $2.50 gas,*** "***the returns are still significantly high***"***)***'"?

A. Yes. I see that.

Q. Do you have a response to that point?

A. Yes. It seems that in this footnote, Ms. Allen is attempting to suggest that the market did not care about the alleged September 7, 2016 misstatements about Alpine High performing well even at very low commodity prices. While it may be the case that no analyst report repeated the single precise statement from September 7, 2016 that Ms. Allen quotes in that footnote, several analysts did report on Defendants' September 7, 2016 representations that

Alpine High would perform well at very low commodity prices. We just reviewed a number of such reports, which were marked as **Exhibits 13 through 18**.

Q. Does Ms. Allen offer an opinion that the alleged commodity price misstatements that Apache made on the first day of the Class Period, or September 7, 2016, had no price impact?

A. No. I don't understand her to offer that opinion, or to offer any opinion addressing the movement in Apache's stock price during any portion of the Pre-Focus Period. She made clear in her deposition testimony, as I testified earlier, that she did not evaluate the Pre-Focus Period. But, although Ms. Allen does not offer any opinion pertaining to the September 7, 2016 misstatements concerning Alpine High, her own event study shows three consecutive days of statistically significant positive price impact from the alleged September 7, 2016 misstatements which, of course, included the commodity price misstatements. Ms. Allen nowhere demonstrates, or even attempts to demonstrate, that the alleged September 7, 2016 commodity price misstatements played no role in these three days of statistically significant positive price impact.

Q. Because Ms. Allen does not contest that the September 7, 2016 alleged commodity price misstatements had a positive price impact, in your opinion, is she able to conclude that the subsequent commodity price misstatements, including those made during her Focus Period, did not maintain any positive price impact that the September 7, 2016 alleged commodity price statements created?

A. No. I don't see how she could reach that conclusion. Given the admitted limitations on her analyses, and her avoidance of the Pre-Focus Period, she is unable to contend, and does not contend, that the statements Defendants made during the Focus Period concerning Alpine High performing well even at very low commodity prices did not maintain the positive

price impact, or inflation, that the September 7, 2016 misstatements concerning Alpine High's performance at very low commodity prices created.

Q. In paragraph 15 of the Surreply Report, Ms. Allen claims that natural gas prices dropped below the levels that she claims Defendants referenced in their statements, such that "***Alpine High would be uneconomic and the market was aware of this before the beginning of the Focus Period and during it***," do you see that?

A. Yes. I see that.

Q. Do you have a response to that?

A. Yes. Again, it is not a negative surprise to investors that Apache, like other E&P companies at the time, would face reduced revenues in this transitory pricing environment. But, Ms. Allen's observations fail to support her point, which is that investors fully expected the deferral of gas production that Apache announced on April 23, 2019.

### C. Ms. Allen Fails to Show that the Positive Price Impact from Misstatements Made on the First Day of the Class Period Dissipated Prior to the Focus Period

Q. If you flip ahead to paragraph 16 of Ms. Allen's Surreply Report, do you see the beginning of a section where Ms. Allen purports to respond to your point that she is unable to demonstrate a lack of price impact during the Focus Period because she does not address when the undisputed positive price impact from Defendants' Pre-Focus Period misstatements dissipated?

A. Yes. I'm there.

Q. And, in the last sentence of paragraph 16 of the Surreply Report, Ms. Allen claims that in making that point, you "***completely ignore[d] the Allen Report's analyses that directly address these issues***," do you see that?

A. Yes. I see that.

Q. Do you agree that the Allen Report "***directly address[ed]***" the question of when the positive price impact that the September 7, 2016 alleged misstatements concerning Alpine High created was dissipated?

A. No. Ms. Allen has never "***directly addressed***" the issues, including in her Surreply Report. Among other things, Ms. Allen does nothing to measure when the positive price impact from the September 7, 2016 misstatements dissipated. She says nothing at all in any of her reports about the two Pre-Focus Period corrective disclosures, including any amount of positive price impact these partial disclosures removed from Apache's stock price. So, she has no basis to challenge that Defendants' misstatements during the Focus Period maintained the positive price impact, which she more often refers to as "inflation," that Defendants' September 7, 2016 misstatements created.

Q. If you turn to paragraph 17 of the Surreply, do you see where Ms. Allen states that "***[t]he Allen Report showed that the alleged inflation (if any) did not come out of Apache's stock price during the Focus Period, including for example through a detailed analysis of each of the alleged corrective disclosures during the Focus Period that showed no statistically significant decline from the alleged misrepresentations***"?

A. Yes. I see that.

Q. What do you understand Ms. Allen to be saying?

A. I found that statement confusing, particularly because Ms. Allen only claims that a lack of statistical significance disproves price impact as to the April 23, 2019 corrective disclosure. But, what she appears to be saying is: whatever accounted for the price declines following the three Focus Period corrective disclosures was so unrelated to the alleged misstatements that Defendants made during the Class Period that she believes that no portion of any of those price declines can be associated with any of Defendants' Class Period

misstatements.

Q. Do you agree with that statement?

A. No. In my view, Ms. Allen did not conduct anything close to what she calls a "detailed analysis" that explains what moved Apache's common stock price following any of the three Focus Period corrective disclosures.

Q. Can an expert rule out price impact from a corrective disclosure without demonstrating, through economic analysis, what, in their opinion, caused the stock price to decline?

A. Not to my understanding. Such an opinion really amounts to a statement that "whatever explains the stock price movement, it's not X." That really tells you very little. It's my understanding that one examining the movement in the price of a security in response to an alleged corrective disclosure, while attempting to show that any such movement shows no price impact from alleged misstatements, must explain what, in their view, actually caused the price movement. And one conducting such an analysis must also demonstrate that no portion of the price decline can be attributed to the correction of one or more alleged misstatements. Ms. Allen does neither.

Q. For any of the three Focus Period corrective disclosures, does Ms. Allen demonstrate what caused the accompanying decline in the price of Apache common stock?

A. No. She does not. For the April 23, 2019 alleged corrective disclosure, she does not try to explain why Apache's stock price declined on that day or on the three subsequent trading days where Apache's stock price continued to decline.

For the October 25, 2019 corrective disclosure, Ms. Allen agrees that Steve Keenan's resignation caused Apache's stock price to decline that day, and points to nothing else that could have contributed to the steep decline in the price of Apache common stock on that

day. However, she suggests that the entirety of the October 25, 2019 price decline resulted from associated investor concern over Apache's exploration efforts in Suriname. In my Reply Report, I included an intraday analysis, which I testified about earlier, showing that any investor concern over Suriname substantially dissipated before noon that day, and cannot account for the statistically significant decline in the price of Apache common stock measured from the close of trading on October 24, 2019 to the close of trading on October 25, 2019, let alone the entirety of it. In her Surreply Report, Ms. Allen has no response to my October 25, 2019 intraday analysis.

For March 16, 2020, other than referencing high volatility, Ms. Allen offers no opinion on what caused Apache's common stock price to suffer statistically significant price declines on March 16-17, 2020. I have controlled for that volatility, and have demonstrated, under a number of different control periods, that the decline in the price of Apache common stock is still statistically significant at or above the 95% confidence level relative to its E&P peers facing the same market conditions.

Q. Do you see at the beginning of paragraph 18 of the Surreply Report Ms. Allen states that her failure to show that the positive price impact created by the alleged September 7, 2016 misstatements dissipated prior to the beginning of the Focus Period is "***irrelevant***"?

A. Yes. I see that.

Q. Do you agree with that statement?

A. No. I do not. This is a critical failing of Ms. Allen's analysis. As I've stated in my Reply Report, and a number of times today, Ms. Allen cannot just sidestep the positive front-end price impact associated with Defendants' September 7, 2016 misstatements by pretending that Apache's common stock price is a blank slate on the first day of her Focus Period. This is actual price impact created by the alleged misstatements, and Ms. Allen cannot disprove its existence by ignoring it.

I also note that Ms. Allen's Surreply Report on this point is inconsistent with her deposition testimony. Specifically, when asked whether price impact exists when the price of a security increases after an alleged misstatement, Ms. Allen stated, as reflected at page 51 of her deposition transcript, "***I think that's evidence that there's price impact from the alleged misstatement***." She also testified, at pages 51-52 of her deposition transcript, "***if your question is, is that information or misinformation impacting the stock price during some other period of time, then one way of analyzing that would be – can be when that information is corrected***." Despite this, Ms. Allen did not conduct any analysis to determine whether any of the positive price impact created by Defendants' September 7, 2016 misstatements dissipated before her Focus Period.

Q. Further down in paragraph 18, Ms. Allen states that she has shown that any remaining positive price impact from the Pre-Focus Period misstatements "***did not come out of Apache's stock price during the Focus Period, including on any of the alleged corrective disclosures***," do you see that?

A. Yes. I see that.

Q. Do you agree with that statement?

A. No. As I mentioned earlier, Ms. Allen does not even attempt to explain what caused Apache's stock price to decline on any of the three Focus Period corrective disclosures, and I have fully responded to her suggestions that the stock price declines in response to the three Focus Period corrective disclosures provide no evidence of price impact from the alleged misstatements made during the Class Period.

Q. Ok, we will cover how Ms. Allen addresses the three Focus Period corrective disclosures a bit later – for now, do you see in paragraph 19 of the Surreply, Ms. Allen includes three small Roman-numeraled items?

A. Yes. I see that.

Q. What do you understand those three items to address?

A. I read this as Ms. Allen's effort to suggest that she does not have to explain what happened to all of the positive price impact that Defendants' September 7, 2016 misstatements concerning Alpine High created. So, because Ms. Allen does not evaluate anything in the Pre-Focus Period, including whether the two Pre-Focus Period corrective disclosures dissipated all of the positive price impact from the September 7, 2016 misstatements, she presents a grab bag of possibilities for what may have happened to all of the positive front-end price impact without taking a position that any one of those possibilities is what actually happened here.

Q. So, with respect to explaining what happened to the Pre-Focus Period inflation in Apache's stock price, Ms. Allen says in the first Romanette in paragraph 19 that one possibility is that "***the pre-Focus Period alleged misrepresentations had no impact at all***," do you see that?

A. Yes. I see that.

Q. Do you agree with that?

A. No. I'm pretty surprised that Ms. Allen even included this as a possibility, though I suppose she made this suggestion because she has done nothing to understand the movements in Apache's stock price during the Pre-Focus Period.

But, the notion that the Pre-Focus Period misstatements had no price impact is demonstrably untrue. As I testified earlier, upon the announcement of the Alpine High discovery on September 7, 2016, Apache's common stock price experienced three consecutive days of statistically significant increases. As I set forth in paragraph 13 of my Reply Report and Exhibit 11B of my Initial Report, under my event study, Apache's stock price increases on September 7, 8, and 9, 2016 are statistically significant at the 99.96%, 97.58%, and 98.18% confidence levels, respectively. Similarly, Ms. Allen's alternative event study finds statistically significant price

increases for these days at the 99.92%, 98.90%, and 97.63% confidence levels, respectively.

Additionally, as I also testified earlier, securities analysts uniformly attributed Apache's dramatic stock price increases on these days to the Alpine High announcement, as I present in paragraph 13 of my Reply Report and as reflected on **Exhibit 6** that you presented to me earlier.

Q. With respect to explaining what happened to the Pre-Focus Period inflation in Apache's stock price, Ms. Allen says in the second Romanette in paragraph 19 that another possibility is that "***the alleged inflation from the pre-Focus Period alleged misrepresentations came out of Apache's stock price before the Focus Period***," do you see that?

A. Yes. I see that.

Q. Do you agree with that?

A. No. If Ms. Allen truly believed that the second Romanette in paragraph 19 was a possible explanation for what happened to the positive price impact associated with Defendants' September 7, 2016 misstatements, she certainly could have analyzed it. But, she did not investigate that issue or conduct any analysis at all of Apache's price movement during the Pre-Focus Period, which is a critical shortcoming underlying both this speculative suggestion and the price impact analyses that Ms. Allen actually conducted, most of which is just selectively reading analyst reports.

Q. Finally, with respect to explaining what happened to the Pre-Focus Period inflation in Apache's stock price, Ms. Allen says in the third Romanette in paragraph 19 that a final possibility is that "***the alleged inflation was still in the stock after the alleged Class Period and is therefore not relevant to Plaintiffs' allegations in this case***," do you see that?

A. Yes. I see that.

Q. Do you agree with that?

A. No. It's Ms. Allen's burden, as I understand it, to establish that the alleged misstatements that Defendants made during the Class Period had no price impact at all. She ignores and cannot account for the positive price impact associated with the September 7, 2016 misstatements. I think that Ms. Allen's grab bag of possibilities in paragraph 19 of her Surreply Report really hammers home that she has no idea what happened to the statistically significant Pre-Focus Period price impact, rendering her unable to conclude that there was no price impact during the Focus Period from the Pre-Focus Period misstatements. Furthermore, Ms. Allen's concession that Apache's stock price could possibly have been inflated beyond the Class Period is irrefutable evidence that she has not proven that the alleged misstatements made during the Class Period had zero price impact during the Focus Period. Had she done so, then such a notion would simply be impossible.

Q. In paragraph 20, Ms. Allen claims that you do not disagree that the alleged misstatements made during the Focus Period did not positively impact Apache's stock price during the Focus Period, do you see that?

A. Yes. I see it.

Q. Do you have a response to that?

A. I agree that I have not disputed Ms. Allen's position that the alleged misstatements made during the Focus Period did not induce statistically significant price increases at the time they were made. I do not agree, however, that Ms. Allen has shown that the alleged misstatements made during the Focus Period had no price impact at all. It is well established that confirmatory misstatements, like those alleged during the Focus Period, can impact a stock price by maintaining the price inflation, or price impact, created by earlier misstatements.

That's what we have here, but Ms. Allen does not analyze it because she

completely ignores Defendants' September 7, 2016 misstatements concerning Alpine High and the three days of statistically significant positive price impact that they created. Earlier in my testimony, when discussing what was marked as **Exhibit 7**, I identified the misstatements made during the Focus Period portion of the Class Period that repeated or confirmed the September 7, 2016 misstatements.

**D. <u>April 23, 2019</u>**

Q. Looking at Ms. Allen's Surreply Report, do you see that in paragraph 22 through paragraph 53 she addresses the opinions you expressed in your Reply Report pertaining to the April 23, 2019 alleged corrective disclosure?

A. Yes. I see that.

Q. Generally speaking, what opinions does Ms. Allen express in these paragraphs?

A. So, Ms. Allen just reiterates the opinions as to April 23, 2019 that she expressed in the Allen Report. That is, she claims that the April 23, 2019 corrective disclosure evidences no price impact from any of the alleged misstatements made during the Class Period because: (1) the April 23, 2019 single-day price decline is not statistically significant at or above the 95% confidence level; (2) there is no basis to measure Apache's stock price reaction to the April 23, 2019 corrective disclosure over multiple days; and (3) the market fully expected the announced natural gas deferral at Alpine High, such that Apache's disclosure of that deferral could not have impacted the Company's stock price.

Q. In your opinion, does Ms. Allen provide evidence in the Surreply Report demonstrating that the alleged April 23, 2019 corrective disclosure does not show any price impact from the alleged misstatements?

A. No. In her Surreply Report, Ms. Allen says nothing about the April 23, 2019 corrective disclosure that demonstrates that the alleged misstatements in this case had no impact

upon the price of Apache common stock during the Class Period.

Q. Turning first to paragraph 22, do you see where Ms. Allen states that "***Dr. Nye claims that a non-statistically significant price reaction is essentially meaningless***"?

A. Yes, I see that.

Q. Do you have a response to that?

A. I don't agree with that. As I testified earlier, in this context, where Ms. Allen is attempting to support Defendants' efforts to rebut the fraud-on-the-market presumption of reliance, I am not aware of a bright-line test of statistical significance that courts routinely apply to determine whether alleged misstatements impacted the price of the security at issue. I have seen some courts insist on a price reaction at or above the 95% confidence level, and I've testified in cases where courts have found that statistically significant price reactions below that confidence level are adequate to demonstrate price impact. Remember, when Ms. Allen uses the term "statistically significant," she is only discussing price responses that are statistically significant at or above the 95% confidence level. I have made clear that, in my opinion, a price reaction at or above that level is quite rare, and I don't believe that such a price reaction is required to determine whether it is more likely than not that an alleged misstatement caused some portion of the stock price movement being investigated.

I base my position on the fact that, among other things, there is no requirement in economics that material information must induce a price reaction that is considered to be statistically significant at a particular level. Indeed, the notion that material information must induce a statistically significant price reaction is incongruous with fundamental tenets of financial economics. I also cover this issue in detail in Section X of my Reply Report.

Q. In paragraph 23 of the Surreply, Ms. Allen states that you have disingenuously quoted the *EZCORP* decision in supporting your opinion that the lack of a statistically significant

price response to an alleged corrective disclosure does not disprove price impact, do you see that?

A. Yes. I see that.

Q. Do you have a response to that?

A. I disagree. I cited more content from the *EZCORP* decision than the few lines of the decision that Ms. Allen focuses on here. For example, in paragraph 21 of my Reply Report, I quoted the *EZCORP* decision for the proposition that "the absence of a statistically significant price adjustment does not show the stock price was unaffected by the misrepresentation." I agree with that point, and it's consistent with academic literature. Moreover, this is my main point of departure from Ms. Allen on the role of statistically significant price responses when evaluating price impact at the class certification stage of a litigation like this one. In other words, she does not accept that the lack of a statistically significant price response at or above the 95% confidence is insufficient evidence to disprove price impact. The *EZCORP* decision, along with all of the other case law and academic literature to which I cite, supports my view, and a slight misunderstanding by one court as to the interpretation of one aspect of the underlying statistical theory does not undercut its validity.

Of course, *EZCORP* is not the only court decision that has held that the absence of a statistically significant price response at or above the 95% confidence level does not disprove price impact, and I cite certain others in footnotes 241 and 242 of my Reply Report.

Q. Do you recall that, during your November 8, 2023 deposition in this case, a copy of the *EZCORP* decision was marked as an exhibit?

A. Yes. I do.

Q. What do you recall about your testimony concerning the *EZCORP* decision?

A. Well, I recall that Defendants had highlighted some language within that decision

and asked me questions about that highlighted portion.

Q. Ok. To make it easier, let's mark as **Exhibit 20**, a copy of Exhibit 6 marked at your November 8, 2023 deposition in this case, which is a copy of the *EZCORP* decision, do you have that?

A. Yes. I do.

Q. Ok, if you turn to page 12 of the pdf of this decision, do you see a highlighted portion?

A. Yes. I see it.

Q. Do you recall testifying concerning the portion that Apache's lawyers highlighted?

A. Yes. I do.

Q. What do you recall about that testimony?

A. I was asked whether the court in this case was mistaken in its conclusion that a p-value of 0.233 suggests that there is a 77% chance that the information at issue impacted the security at issue. And, I agreed that the court was mistaken in arriving at that particular statistical conclusion. I also testified, however, and continue to believe, that the court correctly concluded that the absence of statistical significance at or above the 95% confidence level does not disprove price impact. And, as I testified earlier, a number of other courts have come to that same conclusion in finding price impact challenges invalid and certifying investor classes.

Q. Separately, in paragraph 22, Ms. Allen states that your view of statistical significance in relation to evaluating price impact "***calls into question how Dr. Nye's proposed common damages methodology could even work***," do you see that?

A. Yes. I see that.

Q. Do you have a response to that?

A. Yes. I found that point interesting, as Ms. Allen does not challenge the applicability of the damages methodology that I propose in my Initial Report as one that can measure damages on a Class wide basis consistent with Plaintiffs' liability theory. That said, she's just, in my opinion, raising a merits issue that really has nothing to do with whether Defendants have satisfied their burden of demonstrating that the alleged misstatements had zero price impact during the Class Period. I have not yet calculated damages in this case, nor have I yet been asked to provide an opinion on any amount of recoverable damages.

Q. In paragraph 24 of the Surreply Report, Ms. Allen continues her discussion of the *EZCORP* decision, and states in the final sentence that you "***relied upon the EZCORP decision to support [your] claim that a lack of a statistically significant price reaction does not show a lack of price impact***," do you see that?

A. Yes. I see that.

Q. Again, is Ms. Allen correct that it is your opinion that the "***lack of a statistically significant price reaction does not show a lack of price impact***"?

A. Generally, yes. Consistent with financial economics and court decisions, I believe that the absence of a price reaction that is statistically significant at or above the 95% confidence level does not, on its own, disprove price impact. So, relatedly, I don't think one seeking to disprove price impact can simply point to a price response that is statistically significant below the 95% confidence level and conduct no further analysis.

Q. If you flip ahead to paragraph 28 of the Surreply Report, you see that Ms. Allen states in the first sentence that "***Dr. Nye also claims that 'given the low statistical power of single-firm event studies,' the absence of a statistically significant price reaction is meaningless***," do you see that?

A. Yes. I see that.

Q. Does Ms. Allen accurately state your position?

A. Well, I agree that, in general, single-firm event studies have low statistical power relative to cross-sectional or multi-firm event studies more commonly used in academic research. And, I've already addressed Ms. Allen's mischaracterization of my position on statistical significance. Again, when Ms. Allen uses the term "statistically significant," she is only discussing price responses that are statistically significant at or above the 95% confidence level. I have made clear that, in my opinion, a price reaction at or above that level is quite rare, and I don't believe that such a price reaction is required to determine whether it is more likely than not that an alleged misstatement had an effect on some portion of the single-firm stock price movement being investigated.

Q. Turning to page 17 of the Surreply Report, do you see heading number 2, addressing the four-day window you applied to the price of Apache common stock in response to the April 23, 2019 corrective disclosure?

A. Yes. I'm there.

Q. In paragraph 33 of the Surreply Report, Ms. Allen states that the statistics you provided for the price response of Apache common stock in the days following the April 23, 2019 corrective disclosure are "***clearly the result of cherry-picking***," do you see that?

A. Yes. I see that.

Q. Do you have a response to that statement?

A. It's not "***cherry-picking***" at all. In the Complaint, Plaintiffs plead a four-day price decline in response to the deferral announced on April 23, 2019. Based upon those allegations, I present my results for those four trading days. Ms. Allen, however, does not look at the price impact of the April 23, 2019 corrective disclosure during the four trading days alleged in the Complaint.

Q. Below that, in paragraph 34 of the Surreply Report, Ms. Allen states that your Reply Report "***disingenuously fails to say that not one individual day during the cumulative four-day event window was statistically significant***," do you see that?

A. Yes. I see that.

Q. Do you have a response to that?

A. Yes. That statement is false. I included in paragraph 23 of my Reply Report a table depicting the statistical significance confidence level for each trading day from April 23 through April 26, 2019. Ms. Allen includes that same table in paragraph 34 of the Surreply. Her accusation is completely baseless, as she pasted into her report a table from my Reply Report depicting the very results that she falsely claims I failed to include.

Q. Do you have a response to Ms. Allen's claim in paragraph 34 that, under your event study model, the two-day event window measuring the response of Apache's common stock price to the April 23, 2019 corrective disclosure is not statistically significant?

A. Again, when Ms. Allen says "statistically significant," she means results that are statistically significant at or above the 95% level. Under my event study, when measuring the two-day price response to the April 23, 2019 corrective disclosure, I find the price decline statistically significant at the 92.58% level, which certain courts and I consider sufficient to demonstrate price impact.

Q. Looking at paragraph 35, Ms. Allen claims that you have not shown that "***there was any new fraud-related information released over any of the three days following April 23***," do you see that?

A. Yes. I see that.

Q. To your knowledge, was any Apache-specific value-relevant information at all released on any of the three days following April 23?

A. I did not locate any. And, Ms. Allen has not identified any Apache-specific value-relevant information that was released on any of those days.

Q. How, if at all, does the absence of any Apache-specific value-relevant news from April 24 through April 26, 2019 relate to the validity of measuring the response of Apache's common stock price over the four-day window that you applied in your Reply Report?

A. Well, it really simplifies the exercise. When measuring the price response of a security to news, one often has to disentangle, or disaggregate, portions of the price response that are attributable to news other than the news being studied. That is what we call "confounding information." Since neither I nor Ms. Allen has identified any confounding information concerning Alpine High or Apache during the period from April 23 through April 26, 2019, the natural gas deferral at Alpine High announced on April 23, 2019 is the only Apache-specific value-relevant information that could be impacting the Company's stock price on those days. So, I think that those circumstances permit an easier to execute multi-day event study, where the economist does not have to attempt to assign value to disparate pieces of information.

Q. Do you believe that measuring the price response of Apache common stock over multiple days following the April 23, 2019 corrective disclosure is inconsistent with your opinion that Apache common stock traded in an efficient market during the Class Period?

A. No, I do not. For April 23, 2019, Plaintiffs plead a four-day price response to the announced deferral. Given those allegations, Apache's stock price reaction over those four days is directly relevant to an assessment of whether Defendants' misstatements had price impact, and I'm merely pointing out the fact that Apache's stock price reaction over this four-day period was statistically significant at the 95% confidence level under both my and Ms. Allen's event study regression models. In light of Ms. Allen's emphasis on statistical significance when analyzing price impact, this seems like something she should have considered. My market efficiency test,

on the other hand, is a standard event study of the one-day price responses to Apache's earnings-related announcements during the Class Period, which is consistent with the event studies I have conducted in numerous other securities cases over the past 11 years, all of which have been accepted at the class certification stage. However, while my event study in this context does indeed establish that Apache's stock price promptly responded to the disclosure of new, unexpected, value-relevant information, it does not necessarily imply that Apache's stock price response to those events was complete within a single day. Indeed, the length of time it takes for a company's stock price to fully reflect an informational disclosure is ultimately an empirical issue, which academic economists and expert witnesses have analyzed using multi-day event windows in countless settings. As I discussed earlier today, and in Section XI of my Reply Report, the use of multi-day event windows is widely recognized as a reliable and scientific methodology for estimating the price impact of certain corporate events in a manner that is consistent with market efficiency.

Q. In paragraph 36 of the Surreply Report, Ms. Allen claims that your approach to measuring the Apache common stock price response following the April 23, 2019 corrective disclosure is "***in stark contrast***" to your evaluation of the Apache common stock price response to the October 25, 2019 disclosure of Keenan's resignation, do you see that?

A. Yes. I see that statement.

Q. Do you agree with that?

A. Well, I agree only insofar as I measure the price response over different time periods. Remember, I am examining Ms. Allen's arguments that the misstatements alleged in the Complaint during the Class Period had no price impact. So, when responding to Ms. Allen's observations, I base my consideration of, and responses to, those observations upon what Plaintiffs actually allege in the Complaint. For April 23, 2019, Plaintiffs plead a four-day price

decline. For October 25, 2019, Plaintiffs plead a single-day price decline. So, I'm looking at price impact in the context of those allegations. That does not mean, though, that I've determined that Apache's stock price stopped reacting to Keenan's resignation at the end of the trading day on October 25, 2019. That may be the case, but I have not fully investigated it, given the scope of my assignment to date.

Q. Later in paragraph 36 of the Surreply Report, Ms. Allen states that you "***appear[] to completely change the design of [your] test in order to find a result that supports [your] client's claims***," do you see that?

A. Yes. I see that comment.

Q. Do you have a response to that?

A. Ms. Allen is incorrect. Demonstrating that Apache common stock experienced large price declines over different time periods does not imply a change in the design of my event study methodology. Rather, the multi-day price reactions discussed in my Reply Report are empirical facts observed in an efficient stock market, and Ms. Allen fails to identify any information other than the alleged corrective event that is capable of explaining these observations. Contrary to the suggestion implied by her critique, there is absolutely no bright-line rule of financial economics stating that value-relevant information must be reflected in the market price within a specific amount of time. In Section XI of my Reply Report, I discuss academic literature that explains why efficient market price reactions can take longer than a single day to fully resolve, as well as my understanding that, in *Halliburton II*, the Supreme Court acknowledged the debate among economists about the efficiency of capital markets and refused to "endorse 'any particular theory of how quickly and completely publicly available information is reflected in market price.'" As I just mentioned, the use of multi-day event windows is widely recognized as a reliable and scientific methodology for estimating the price

impact of certain corporate events in a manner that is consistent with market efficiency.

Additionally, no court has ever questioned my independence as an expert, and no court has ever excluded or discredited any portion of any opinion I have authored addressing economic issues at the class certification stage of a case.

In any event, as I've now said repeatedly, I measured the price response of Apache common stock to the April 23, 2019 corrective disclosure over the same four-day period that Plaintiffs plead in the Complaint. The test is pinned to those allegations, and Ms. Allen overlooks this in making her unfounded accusations.

Q. In paragraph 37 of the Surreply Report, Ms. Allen states that the academic literature you cite in support of using a multi-day window to measure the Apache common stock price response following the April 23, 2019 corrective disclosure does not support your approach, do you see that?

A. Yes. I see that.

Q. Do you agree with Ms. Allen?

A. No. I don't agree with Ms. Allen, who seems to be focused on certain of the authors' statements concerning when it may be appropriate to measure a security price response to information using a multi-day window. Here, again, I start with the allegations in the Complaint, which pleads a four-day price decline in response to the April 23, 2019 corrective disclosure. In challenging price impact associated with this disclosure, Ms. Allen does not examine Apache's cumulative abnormal stock price movement over those four trading days. I did that to be consistent with Plaintiffs' allegations.

Q. As to Ms. Allen's comment about the literature, in both paragraph 37 and footnote 59, do you have any response?

A. Ms. Allen grossly mischaracterizes the academic literature I cite in support of

using a multi-day event window. With respect to MacKinlay (1997), the only academic article Ms. Allen directly addresses in the body of her paragraph 37, she asserts that the paper recommends the use of a two-day event window because it "captures the price effects of announcements which occur after the stock market closes on the announcement day." Thus, according to Ms. Allen, MacKinlay (1997) does not support the use of a multi-day event window for the April 23, 2019 corrective disclosure since the corrective information came out before the market opened that day. However, Ms. Allen conveniently omits the sentences both directly before and after the one she quotes, which state: (1) "[i]n practice, the period of interest is often expanded to multiple days, including ***at least*** the day of the announcement and the day after the announcement"; and (2) "[t]he periods prior to and after the event may also be of interest." Ms. Allen also fails to mention that in the section titled "Measuring and Analyzing Abnormal Returns," MacKinlay (1997) states that "[t]he concept of a cumulative abnormal return is necessary to accommodate a multiple period event window," and mathematically defines the cumulative abnormal return as the sum of the returns during the chosen event window, under the guidance that "[e]ven if the event being considered is an announcement on a given date it is typical to set the event window length to be larger than one. This facilitates the use of abnormal returns around the event day in the analysis." In the same section, MacKinlay (1997) also describes the statistical distribution of cumulative abnormal returns from which "tests of the null hypothesis can be conducted," and the level of statistical significance calculated. In sum, contrary to Ms. Allen's assertion, MacKinlay (1997) does not even remotely suggest that event windows should be restricted to a single trading day for disclosures that occur before market open.

With respect to her footnote 59, Ms. Allen similarly asserts that "***[t]he [other] academic literature [Dr. Nye] cites does not support his claims and argues against market efficiency, is***

***completely theoretical, and/or directly contradicts his own claims***." Yet, unsurprisingly, Ms. Allen was unable to find a single source, from those cited in my Reply Report or from the broader academic literature she undoubtedly scoured, supporting the notion that efficient stock prices always fully react to value-relevant information within a single day, thereby making multi-day event windows improper. She also does not dispute the conclusion of Zhang (2006) "that uncertainty delays the flow of information into stock prices." Instead, without explaining why, Ms. Allen merely asserts that such a conclusion "would directly violate Dr. Nye's findings of market efficiency for Apache." However, it is worth noting that Zhang (2006) makes no mention of the terms "inefficient" or "inefficiency," much less conclude that a delayed price response to uncertain information constitutes market inefficiency.

Ms. Allen similarly asserts that *Berk and Demarzo*, a popular business school textbook, "***[d]irectly contradict[s] Dr. Nye's claim that Apache stock's price reaction cannot be statistically detected until four days after the April 23, 2019 alleged corrective disclosure***." According to Ms. Allen, this is because in certain circumstances the authors would "expect […] the stock price to react nearly instantaneously" and that "most investors would find that the stock price already reflected the new information before they were able to trade on it." She fails, however, to mention the authors' qualification in the prior sentence, stating that such an expectation would hold only "[if] the impact of this information on the firm's future cash flows can be readily ascertained, [such that] ***all investors*** can determine the effect of this information on the firm's value." She also omits the very next section of the chapter, titled "Private or Difficult-to-Interpret Information," which states that "[e]ven when information is publicly available, it may be difficult to interpret. … In these cases, while fundamental information may be public, the interpretation of how that information will affect the firm's future cash flows is itself private information. … In this case, the efficient markets hypothesis will not hold in the

strict sense. However, as these informed traders begin to trade, they will tend to move prices, so over time prices will begin to reflect their information as well." Thus, contrary to Ms. Allen's assertion, the findings of *Berk and DeMarzo* are entirely consistent with my Reply Report, which describes the propriety of using multi-day event windows, given that: (1) "unexpected events can convey complex ramifications to firm value"; (2) "[t]hough investors may be immediately apprised of an event's occurrence, determining the full price impact of such an event is not necessarily an instantaneous undertaking, particularly as different traders with the same information come to different conclusions as to the true price impact, and need to find willing counterparties with which to trade"; and (3) "while generally efficient market prices may not always reflect fundamental value immediately, they do change in accordance with fundamental value via the market trading mechanism. But trading takes time." Moreover, the findings of *Berk and DeMarzo* do not undercut my opinion that Apache common stock traded in an efficient market during the Class Period. As stated in paragraphs 17 and 18 of my Initial Report, it is my understanding that, in *Halliburton II*, the Supreme Court clarified that the fraud-on-the-market theory is based not on market efficiency in the strict sense, but rather "on the fairly modest premise that 'market professionals generally consider most publicly announced material statements about companies, thereby affecting stock market prices,'" and that a market need only be "generally efficient" to invoke the fraud-on-the-market presumption. With respect to Dow and Gorton (1993), Kyle (1985), and Grossman and Stiglitz (1980), Ms. Allen attempts to brush these seminal academic papers aside by describing them as "***completely theoretical works on complex trading patterns between informed and uninformed traders and thus do not support Dr. Nye's empirical claim that Apache's stock price continued responding to the April 23, 2019 alleged corrective disclosure until four days after the information was released***." Again, Ms. Allen fails to state why the theoretical implications of these papers, all of which predict a

prolonged price reaction to the disclosure of complex or difficult-to-interpret information in the context of an otherwise efficient market, somehow fail to support the use of multi-day event windows to analyze the price impact of complex or difficult-to-interpret information. To the extent she is attempting to minimize the scholarly impact of these papers, I note that Joseph E. Stiglitz won the 2001 Nobel Prize in Economics for his work on the theory of markets under information asymmetry, and *Google Scholar* reports that these three papers have been cited over 25,000 times, collectively.

Last, Ms. Allen attacks my citation to Mitchell and Netter (1994), authored by former SEC staff, and Tabak and Dunbar (2001), published in the *Litigation Services Handbook* and co-authored by two of Ms. Allen's colleagues at NERA. Though both of these papers unequivocally state that multi-day event windows (up to five days in the case of the NERA paper) are commonly used in securities litigation, Ms. Allen latches onto language in both papers cautioning that longer event windows run the risk of picking up confounding effects that could contaminate the corresponding cumulative abnormal return's ability to measure the price impact of the event under study. However, Ms. Allen fails to mention that neither she nor I have found any confounding Apache-specific information disclosed during the four-day event window following the April 23, 2019 alleged corrective disclosure, thereby rendering this concern moot. Ms. Allen also points to her NERA colleagues' guidance, stating that "'***it is helpful to have some rationale for the length of the event window chosen,' which Dr. Nye clearly does not have***." Here, Ms. Allen seems to have forgotten the allegations in the Complaint, which pleads a four-day price decline in response to the April 23, 2019 corrective disclosure.

Q. In that same paragraph, Ms. Allen also claims that your use of a multi-day window in this case is "***not consistent with [your] analyses in prior reports***," do you see that?

A. Yes. I see that.

Q. Does Ms. Allen provide any examples?

A. No. She does not.

Q. Do you know which cases she may have in mind?

A. No. I don't.

Q. Is it your testimony that Ms. Allen is incorrect on this point?

A. Well, she very likely is. It depends upon the point that she's making, which is really hard to decipher, given that she does not identify any of my other reports or specify the purported inconsistency that she suggests she perceives. So, I'm really left guessing. Is she saying that my market efficiency event studies don't use a multi-day window? If so, that's true. As I testified earlier, my market efficiency test is a standard event study methodology measuring one-day price responses to Apache's earnings-related announcements. This does not mean that Apache's stock price response to the events measured was complete within a single day. Rather, the single-day event study for testing the cause-and-effect relationship between the release of new, value-relevant information and a security price response is standard practice at the class certification stage, and it's consistent with the event studies I've run in such cases when examining market efficiency at the class certification stage over the past 11 years. But, given the imprecision and lack of support for this accusation by Ms. Allen, I really don't know what she has in mind.

Q. In paragraphs 40-45 of the Surreply Report, Ms. Allen contends that if you used a four-day window in your cause-and-effect test for market efficiency, you would not have found that Apache common stock traded in an efficient market during the Class Period, are you familiar with that?

A. Yes. I remember Ms. Allen making that point.

Q. In your opinion, is there any validity to Ms. Allen's point?

A. Well, when asked about this at my deposition, I believe I referred to this as a "silly analysis." I stand by that testimony entirely. Among the reasons why I find this analysis silly is that Ms. Allen is again mixing apples and oranges. I won't repeat myself as to why, when testing for market efficiency, I always use one-day windows, which is consistent with academic literature and court decisions, and I have never been involved in a case where the court failed to certify a class because the judge concluded that the plaintiff had failed to establish market efficiency.

But, if one were seriously considering Ms. Allen's baseless suggestion to test for market efficiency using four-day event windows, for which she cites no academic support, then one would have to closely examine what happened over each of those four-day periods. In the results that Ms. Allen presents in these paragraphs, there is no indication that she has any idea what transpired in the trading days subsequent to the fourteen releases of Apache financial results that I tested. So, the results that she obtained using a four-day window could be completely consistent with market efficiency and consistent with the value implications of the news conveyed over the course of each of these four-day windows. But, we don't know because she did not perform that analysis. As a result, Ms. Allen's suppositions are unreliable.

Q. Moving to paragraph 46 of the Surreply Report, do you see that Ms. Allen challenges your reading of analyst reports "***following the April 23, 2019 alleged corrective disclosure***"?

A. Yes. I see that in paragraph 46.

Q. And, in the last sentence of paragraph 46 of the Surreply Report, Ms. Allen claims that, following the April 23, 2019 disclosure, "***[a]nalysts consistently characterized the deferral as 'expected' and 'prudent' given the deteriorating commodity prices***," do you see that?

A. Yes. I see that also.

Q. Based upon your review of analyst reports issued at or about the time of the April 23, 2019 corrective disclosure, do you agree with Ms. Allen that the deferral of gas production at Alpine High was expected by investors at the time that it was announced?

A. No, I do not. As I testified earlier, a number of analysts viewed the announcement as negative. Remember, Ms. Allen tries to support her argument that the natural gas production deferral at Alpine High, disclosed on April 23, 2019, was fully expected by the market based upon prior analyst reports noting that Apache would face challenges in a lower commodity price environment. Again, that's an unremarkable observation for an E&P company, like Apache, which will earn lower revenues when selling gas at lower prices. But, that does not mean that the market as a whole expected Apache to defer natural gas production indefinitely in response. In fact, Defendant Christmann previously informed investors that Alpine High was so "prolific" in economically recoverable wet gas that it would generate dry gas "for free."

As for the analyst reports issued on or shortly after April 23, 2019, not one of them definitively states that the announcement was expected, and none questions why Apache did not make the announcement earlier than it did. Even the excerpt of the Stephens report that Ms. Allen includes in paragraph 49 of her Surreply Report to try to support her position states "we view the release as a negative." And, more importantly, the Stephens analyst speculates that "we do not think it is a surprise to the market that depressed [] pricing is hampering Alpine cash generative abilities." This is consistent with the other analyst reports that Ms. Allen repeatedly references that draw the unremarkable conclusion that Apache will make less money selling gas at lower prices, but it is not equivalent to saying "we do not think it is a surprise to the market that Apache deferred gas production at Alpine High." Moreover, the Stephens analyst also concluded that "incremental details are needed to fully quantify the impact." Yet, if the gas deferral was fully expected by analysts, as Ms. Allen contends, then no incremental details

would be needed to fully quantify the impact, and Apache's stock price would have fully reflected the value ramifications of the gas deferral well ahead of the April 23, 2019 disclosure, such that no stock price decline would have ensued. Of course, that is not what happened, as Apache's stock price declined significantly over the subsequent four days.

Q. In paragraph 48 of the Surreply Report, Ms. Allen responds to the point you made in your Reply Report that a number of analysts viewed the deferral announced on April 23, 2019 as "***negative***," do you see that?

A. Yes. I see that.

Q. In particular, Ms. Allen claims that "***negative does not mean unexpected***," do you see that?

A. Yes.

Q. Do you have a response to that point?

A. Well, I'm pretty sure that "negative" does not mean "expected" either. More fundamentally, though, finding an announcement was "negative" is inconsistent with the notion that the announcement was expected. It's really just common sense, if securities analysts fully expected the announced deferral, as Ms. Allen opines, they would not have assigned to it a "negative" label. Rather, such "negative" news would already have been incorporated into the share price. In my experience, if a securities analyst saw this announcement coming or, in Ms. Allen's words, "fully expected" the announced deferral, they would have said just that and pointed to a prior report or writing where they made such a prediction. I've seen no analyst report, and Ms. Allen does not cite one, that points to the announced natural gas deferral at Alpine High as confirming something the analyst predicted.

Q. In paragraph 50 of the Surreply Report, Ms. Allen claims that, with respect to the April 23, 2019 announced deferral at Alpine High, "***the market was already aware and expected***

***the deferral due to the extremely low-price environment***," do you see that?

A. Yes. I see that.

Q. Have you seen any evidence supporting Ms. Allen's claim that, as to the April 23, 2019 deferral announcement, "***the market was already aware***" that Apache had deferred natural gas production at Alpine High?

A. No. I don't know what she's basing that on. Ms. Allen has not presented any evidence at all that the market knew any details of the deferral prior to Apache's April 23, 2019 announcement. If there was such evidence, I assume that Ms. Allen would have presented it and then argued that the market already knew of the deferral before it was announced. She does not do that. Instead, she claims that it was expected. As I testified earlier, I disagree with that claim, and the analyst reports that Ms. Allen cites do not support that the market fully expected the natural gas production deferral at Alpine High that Apache announced on April 23, 2019, or its scope or duration.

Q. If you turn ahead to paragraph 52 of the Surreply Report, do you see in the first sentence where Ms. Allen states that "***not a single analyst attributed the deferral to any new information about Alpine High's quantity or mix of oil and wet gas v. dry gas***"?

A. Yes. I see that.

Q. Do you have a response to that point?

A. Yes. This is a red herring that arises from Ms. Allen's unduly narrow view of Plaintiffs' claims and the alleged misstatements at issue. Because Ms. Allen apparently sees this case as alleging nothing more than that Defendants misstated the relative quantities of gas and oil at Alpine High, she only sees a disclosure as related to a prior misstatement, or corrective of it, if that disclosure contains new information on the oil and gas mix at Alpine High. But, that is not the case that Plaintiffs plead in the Complaint. Again, this cabined view of the Complaint's

allegations ignores a number of alleged misstatements, including those Defendants repeatedly made about Alpine High's performance even at "very, very" low commodity prices.

For April 23, 2019, nobody is disputing the basis for the announced deferral, which is the low gas prices. The announced deferral in response to those low gas prices, however, relates directly to Defendants' repeated statements, including those made on September 7, 2016, that Alpine High would perform well even at very low commodity prices. The April 23, 2019 deferral announcement relates to those prior misstatements because it conflicts with Defendants' repeated representations that Alpine High would perform well, even when faced with very low commodity prices. Among other alleged misstatements, the April 23, 2019 deferral announcement relates to Defendant Christman's assurance, the day before Ms. Allen's Focus Period begins, that Alpine High "***is going to really hum below $2 on the gas side***" and that "***[w]e would not be making this type of investment on the midstream or the upstream side if we thought there was a sensitivity that was close to anything that would come into not making it work under very, very low gas and NGL and oil prices***." That February 22, 2018 statement, itself, is confirmatory of Defendants' September 7, 2016 claim that Alpine High was a "***very wet gas resource***" where Apache was "***virtually going to get the [dry] gas for free***."

Q. Given Plaintiffs' allegation that the April 23, 2019 disclosure was corrective of Defendants' repeated statements claiming that Alpine High would perform well even in a very low commodity price environment, what importance, if any, do you assign to Ms. Allen's point that analysts did not change their views "***in the estimated quantity or mix of Alpine High's 'unbooked reserves' of wet gas, dry gas, and oil***," set forth at the end of paragraph 53 of the Surreply Report?

A. None – for the reasons I just provided. It's a red herring.

**E. October 25, 2019**

Q. Looking at Ms. Allen's Surreply Report, do you see that in paragraph 54 through paragraph 58 she addresses the opinions you expressed in your Reply Report pertaining to the October 25, 2019 alleged corrective disclosure?

A. Yes. I see that.

Q. Generally speaking, what opinions does Ms. Allen express in these paragraphs?

A. Ms. Allen claims that the decline in the price of Apache common stock on October 25, 2019, in response to the announcement of Steve Keenan's resignation from the Company, which is statistically significant at above the 99% confidence level under her own event study, does not evidence any price impact from the alleged misstatements made during the Class Period because it somehow did not reveal any new information relating to the alleged misstatements about Alpine High. Ms. Allen also claims that investor speculation over Apache's operations in Suriname caused the entirety of the Apache common stock price decline that day, while completely ignoring the October 25, 2019 intraday analysis that I conducted disproving that. Because she ignores the intraday analysis that I presented in my Reply Report in response to her contention in the Allen Report that investors' putative Suriname concerns caused this price decline, she says nothing new in the five paragraphs in the Surreply Report that she devotes to the October 25, 2019 corrective disclosure.

Q. In your opinion, does Ms. Allen provide evidence in the Surreply Report demonstrating that the alleged October 25, 2019 corrective disclosure evidences no price impact?

A. No, she does not. As I said, she presents no further support for her opinion as to the October 25, 2019 corrective disclosure beyond what was already included in the Allen Report. Ms. Allen also ignores the intraday analysis that I performed, which refutes her suggestion that investor concern over Apache's operations in Suriname caused the entirety of the

statistically significant price decline in Apache common stock from the close of trading on October 24, 2019 to the close of trading on October 25, 2019.

Q. If you look to the bottom of paragraph 54 of the Surreply Report, do you see where Ms. Allen states that, with respect to your Reply Report, "***Dr. Nye fails to identify any new news about Alpine High that was released on this date and ignores that market commentary is essentially unanimous in directly attributing the stock price decline to Suriname speculation***"?

A. Yes. I see that.

Q. So, let's take that in parts – first, do you have a response to Ms. Allen's claim that you "***fail[] to identify any new news about Alpine High that was released on***" October 25, 2019?

A. Yes. In my opinion, the October 25, 2019 announcement that Steve Keenan, the public face of Alpine High, had suddenly and unexpectedly resigned was new information bearing directly upon Alpine High as well as Apache. The overwhelming majority of analyst reports and news articles issued in the wake of Keenan's resignation directly connected him to Alpine High, its poor performance, and its corresponding negative impact upon Apache. Ms. Allen lobs the same baseless critique of my analysis in paragraph 57 of her Surreply.

Q. Ok, we'll get to paragraph 57 in a moment, but sticking with paragraph 54, do you have a response to Ms. Allen's separate claim that you "***ignore[] that market commentary is essentially unanimous in directly attributing the stock price decline to Suriname speculation***"?

A. Yes. Even before we look at the content of the so-called "market commentary" that Ms. Allen points to, my uncontested intraday analysis for Apache's stock price movement on October 25, 2019 disproves the notion that Suriname concerns explain the entirety of the statistically significant decline in the price of Apache common stock on this day. Despite being

afforded a 43-page Surreply, Ms. Allen does not contest my analysis, and she has no response to my analysis showing that any Suriname-related concerns had abated before noon during the October 25, 2019 trading day, due to the Company's own clarification during market hours that day.

With respect to the "***market commentary***" to which Ms. Allen refers, I disagree that it is "***essentially unanimous***," other than in reiterating that Apache itself had made clear that Keenan's resignation was unrelated to the Company's exploration efforts in Suriname. I further disagree that such commentary is fairly read as "***directly attributing***" the October 25, 2019 decline in Apache's common stock price to "***Suriname speculation***," as Ms. Allen claims. Those reports are instead more fairly read as themselves speculating about any impact that investor speculation about Suriname may have had on the stock price before noon that day.

Q. Circling back to Ms. Allen's point about "***market commentary***" expressed in paragraph 54, do you see the last sentence of paragraph 55 of the Surreply Report, which states: "***[t]he three analysts that issued reports on October 25, 2019 directly attributed Apache's stock price decline on that day to the market's concerns about Apache's Suriname well***"?

A. Yes. I see that.

Q. Do you agree with that point?

A. No, I do not.

Q. We've marked as **Exhibit 21** the Credit Suisse analyst report issued on October 25, 2019 that Ms. Allen references in paragraph 55 of her Surreply Report, do you have that?

A. Yes, I do.

Q. Dr. Nye, what, if anything, does this Credit Suisse report that we have marked as **Exhibit 21** tell you about what caused the statistically significant price decline on October 25, 2019?

A. Well, with respect to the statistically significant price decline at above the 99% confidence level that both Ms. Allen and I observed in our respective event studies measured from the close of trading on October 24, 2019 to the close of trading on October 25, 2019, this reports tells you very little. It was issued during the trading day on October 25, 2019, so it is not commenting on Apache's close-to-close price decline that day.

But, looking at the beginning of the first page of this report, under the first bullet referencing Mr. Keenan's resignation, the analyst immediately connects Steve Keenan to Alpine High. In that regard, the report flags Keenan as the person who "***oversaw the discovery of the Alpine High play, which has been an economic disappointment for investors***." The report continues discussing Alpine High, stating, "***since APA unveiled the play in September 2016, its shares have underperformed global E&Ps by >30%, likely a cause for Mr. Keenan's resignation***." So, right in that first paragraph, the Credit Suisse analyst connects Keenan to Alpine High and then identifies Alpine High as a likely cause of Keenan's resignation.

In the next bullet, the analyst reiterates Apache's statement that "***the resignation is not connected to the exploration prospect***" in Suriname. The analyst then notes that the ongoing price decline on October 25, 2019 "***highlights the high expectations***" for Suriname. So there, again during the trading day, the Credit Suisse analyst speculates that concerns over Suriname may have contributed to the intraday price decline observed prior to market close, but acknowledges Apache's later statement that the resignation was unrelated to Suriname. Nowhere in this report does Credit Suisse attribute the close-to-close price decline solely to concerns about Suriname. The remainder of this report notes that Apache's stock price will likely decline if its exploration efforts in Suriname are unsuccessful, which is an unremarkable observation, given the economic reality that the prospects of E&P companies are almost solely dependent on the quantity and quality of the hydrocarbons they can produce.

Q. We've marked as **Exhibit 22** the RBC analyst report issued on October 25, 2019 that Ms. Allen references in paragraph 55 of her Surreply Report, do you have that?

A. Yes, I do.

Q. Dr. Nye, what, if anything, does this RBC report that we have marked as **Exhibit 22** tell you about what caused the statistically significant price decline on October 25, 2019?

A. Well, as was the case with the Credit Suisse report we just looked at, it tells you very little about the statistically significant price decline at above the 99% confidence level that both Ms. Allen and I observed in our respective event studies measured from the close of trading on October 24, 2019 to the close of trading on October 25, 2019. This RBC report was issued less than one hour into the trading day on October 25, 2019. As reflected in the graph depicting my October 25, 2019 intraday analysis included in paragraph 37 of my Reply Report, this RBC report was issued at 10:19 a.m. that day. So, the RBC report does not comment at all on the close-to-close price decline that day.

So, the first thing to note about this report is its headline: "***APA – SVP Resignation Causing Stock Weakness; Company Indicating Not Related to Maka-1 Outcome***." To be clear, Maka-1 was at this time Apache's exploration well in Suriname. So, the headline repeats the Company's statement that Keenan's resignation was not related to Suriname. RBC was actually the first analyst to report that fact, based upon its early conversation with Apache, after Bloomberg reported on the resignation at 9:44 a.m. on October 25. Later in the report, however, RBC does note Keenan's connection to Alpine High, flagging him as "***a major part of the team that discovered the Alpine High play***," and noting that "***the results from Alpine High have not met high expectations***."

Furthermore, rather than "***directly attribut[ing] Apache's stock price decline on that day to the market's concerns about Apache's Suriname well***," as Ms. Allen claims, RBC is

only commenting on the price decline during the first 45 minutes of trading that day, given that the report indicates it was "***produced***" at 10:15 a.m. The RBC report is also quite obviously speculating about the early morning price decline when it states, "***[w]e think APA share weakness is a reaction to investor concern that the resignation is related to the outcome of Apache's Maka-1 exploration well in Suriname***."

Thus, I don't see any basis to highlight, as Ms. Allen does, this analyst's speculation about the price movement in Apache common stock during the first 45 minutes of trading on October 25, 2019 as evidence of what caused the statistically significant decline in Apache's common stock price from the close of trading on October 24, 2019 to the close of trading on October 25, 2019.

Q. We've marked as **Exhibit 23** the SunTrust Robinson Humphrey (Truist) analyst report issued on October 25, 2019 that Ms. Allen references in paragraph 55 of her Surreply Report, do you have that?

A. Yes, I do.

Q. Dr. Nye, what, if anything, does this Truist report that we have marked as **Exhibit 23** tell you about what caused the statistically significant price decline on October 25, 2019?

A. I apologize for repeating myself, but each of the analyst reports Ms. Allen cites in support of her claim that investor speculation over Apache's efforts in Suriname caused the entirety of Apache's October 25, 2019 price decline all share the same flaw. Like the other two reports we just reviewed, the Credit Suisse and RBC reports, this Truist report was also issued in the middle of the trading day on October 25, 2019. So, like those other two reports, this Truist report tells you very little about the statistically significant price decline at above the 99% confidence level that both Ms. Allen and I observed in our respective event studies measured from the close of trading on October 24, 2019 to the close of trading on October 25, 2019.

Despite that, I note the rather sizeable headline to this report, which basically shouts: "***Resignation not Linked to Upcoming Suriname Well Result***." This analyst report then begins by stating a view that the underperformance in Apache common stock that morning arose from "***investor speculation that a SVP's resignation is linked to an upcoming unsuccessful Suriname Maka-1 exploration well in Block 58***." The analyst, however, states immediately after that, "***[w]e do not believe the departure is linked to the results of the well as it does not appear that the well has reached its target formation yet.***"

Thus, this report is interesting not only because it reiterates Apache's statement that Keenan's resignation was unrelated to Suriname, but also because it gives a reason as to why it could not be, which is that the Maka-1 well could not be the source of poor results, because it had not yet reached its target formation. Like Apache's statement that Keenan's resignation was unrelated to Suriname, the Truist report statement that Apache's Suriname results were not yet knowable would serve to alleviate any investor concern over Apache's Suriname efforts, which is completely consistent with my unchallenged intraday analysis for October 25, 2019.

Finally, like the other two analyst reports, the Truist report connects Keenan to Alpine High, stating "***the departed SVP was a part of the team that discovered Alpine, which has been disappointing to investors given the weak returns due to the high gas nature***." Further distancing Keenan from Suriname, the Truist analyst report makes clear that a different Apache SVP, "***Faron Thibodeux is the SVP in charge of Suriname***."

Q. In paragraph 55 of the Surreply Report, Ms. Allen concludes, with respect to Suriname, that "***the Allen Report clearly identified the factor that according to analysts caused the statistically significant decline on October 25, 2019***," do you see that?

A. Yes. I see that.

Q. Do you agree with Ms. Allen's statement?

A. No. I don't agree, for all of the reasons I've previously given, as supported by my uncontested intraday analysis. That said, this is really an odd statement by Ms. Allen. In this statement, Ms. Allen claims that she identified what *analysts believed* was the cause of the decline in the price of Apache common stock on October 25, 2019, as opposed to expressing what she, Ms. Allen, actually believes caused that price decline.

This statement is also completely wrong as a factual matter. Ms. Allen claims that Suriname concerns are "***the factor that according to analysts caused the statistically significant price decline on October 25, 2019***." That statement is not only unsupported by the analyst commentary, which we just reviewed, but given the record here, it cannot be true. Each analyst report that Ms. Allen cites in paragraph 55 to support this point was issued during the trading day on October 25, 2019. Yet, the "***statistically significant price decline on October 25, 2019***" that Ms. Allen references in that statement is measured from the close of trading on October 24, 2019 to the close of trading on October 25, 2019. Thus, as a matter of fact, no analyst said anything about the "***statistically significant price decline on October 25, 2019***" for the simple reason that the trading day had not concluded when each analyst issued its respective report. And, again, my intraday analysis, combined with Ms. Allen's failure to discuss it at all, disproves Ms. Allen's speculative suggestion that Suriname concerns account for the entirety of the statistically significant price decline on October 25, 2019.

Q. Does Ms. Allen contend that there is a more appropriate way to measure the response of Apache's common stock price to the October 25, 2019 corrective disclosure than from the close of trading on October 24, 2019 to the close of trading on October 25, 2019?

A. No, she does not. And, she also does not conduct any economic analysis to test her suggestion that Suriname concerns drove the entirety of the decline in Apache's common stock price on October 25, 2019.

Q. In paragraph 56 of the Surreply Report, do you see that Ms. Allen points to certain market commentary issued after October 25, 2019?

A. Yes. I see that.

Q. Do you believe that any of that market commentary post-dating October 25, 2019 supports Ms. Allen's contention that "***the Company's statement that Mr. Keenan's departure was not related to Suriname did not fully alleviate market concern about the Suriname well***"?

A. No. I have reviewed the sources that Ms. Allen cites, and they are unpersuasive. None remotely suggests that the statistically significant decline in the price of Apache common stock, measured from the close of trading on October 24, 2019 to the close of trading on October 25, 2019, is entirely attributable to investor concern over Suriname, which is what Ms. Allen must prove to demonstrate that the October 25, 2019 corrective disclosure shows zero price impact from the misstatements that Defendants made during the Class Period.

In citing these sources in her Surreply Report, Ms. Allen is merely referencing additional materials observing that investor concerns over Suriname appeared to contribute to the Apache stock price decline during the early portion of the October 25, 2019 trading day. These observations are consistent with my unchallenged intraday analysis, which shows that such concerns appeared to contribute to the October 25, 2019 Apache stock price decline until analysts and Apache made clear that Keenan's resignation was unrelated to Suriname, as depicted in the intraday price chart included in paragraph 37 of my Reply Report. These post-October 25, 2019 sources are consistent with my intraday analysis, and do nothing to refute it. They also contain additional information making clear that Keenan's resignation, as a matter of fact, had nothing to do with Apache's exploration efforts in Suriname.

In any event, to the extent there was any residual investor concern about Suriname that could account for any of the statistically significant price impact associated with the October

25, 2019 corrective disclosure, that would simply comprise confounding news, and any impact such confounding news may have had on Apache's share price would be addressed, if necessary, when calculating damages at a later stage of this litigation.

Q. Dr. Nye, we've marked as **Exhibit 24**, a copy of a December 2, 2019 article published by Dow Jones Institutional News, entitled "Apache Shares Plunge Following Scant Update on Oil Prospect," and bearing production number NERA_017164, do you have that?

A. Yes. I have it.

Q. Have you seen **Exhibit 24** before?

A. Yes. I have reviewed this article from Ms. Allen's document production, and it is one of the sources that she cites in paragraph 56 of her Surreply Report.

Q. Is there anything in **Exhibit 24**, dated December 2, 2019, that supports Ms. Allen's suggestion that investor concern over Suriname accounted for the entirety of the statistically significant decline in the price of Apache common stock measured from the close of trading on October 24, 2019 to the close of trading on October 25, 2019?

A. No, there is not. As with the other sources that Ms. Allen cites to support her suggestions concerning Apache's stock price movement on October 25, 2019, this article notes that Keenan's resignation prompted concerns about Suriname. Consistent with analyst reports and the Company's own press release issued early in the trading day on October 25, 2019, this article also includes a quote from Defendant Christmann, which makes clear that Keenan had nothing to do with Apache's exploration efforts in Suriname. Specifically, the article quotes the following statement that Defendant Christmann made during Apache's third quarter 2019 earnings call: "***Steve did not have anything to do with us getting into Suriname or taking this block***."

Q. In paragraph 57 of the Surreply Report, Ms. Allen claims that "***Dr. Nye flatly***

***ignores that there was no new news about Alpine High announced on*** " October 25, 2019, do you see that?

A. Yes.

Q. In your opinion, what, if any, new news related to Alpine High did Mr. Keenan's resignation, disclosed on October 25, 2019, convey?

A. I was asked a similar question at my November 8, 2023 deposition in this case. As I stated then, Keenan's resignation revealed, among other things, that the Apache senior executive that the Company credited with discovering and overseeing Alpine High – the supposedly "***world class***" resource and "***transformative discovery***" that would drive Apache shareholder returns for years – had suddenly left the company. Remember also that Christmann informed investors, at the May 11, 2017 Apache Annual Shareholder Day, that Keenan was deserving of Apache's President's Award because "***he and his team have made a significant discovery at Alpine High. It's a field that will deliver incredible value to Apache and its shareholders for many, many years to come***." Keenan's resignation strongly signaled to investors that Alpine High was not going to be the "***transformational discovery***" that would "***change the course of Apache***" – at least not for the better – and, most importantly, made clear that the play would not "***deliver incredible value to Apache and its shareholders for many, many, years to come***."

In contrast to all of Defendants' representations during the Class Period that Alpine High would be a multi-year value-driver for Apache, Keenan's resignation indicated to investors that Apache was poised to step away from its supposedly biggest discovery just three years after repeatedly assuring investors that Alpine High would change the course of Apache for the better. That is decidedly negative new information concerning Alpine High.

Q. Does Ms. Allen conduct any economic analysis demonstrating that market

concerns over Alpine High arising from Keenan's resignation played no role whatsoever in the statistically significant price decline in Apache common stock on October 25, 2019?

A. No. She appears to base her opinion entirely on misreading three analyst reports and ignoring the uncontested economic reality that my intraday analysis depicts. Ms. Allen has done nothing to show that market concerns over Alpine High arising from Keenan's resignation played no role whatsoever in the statistically significant price decline in Apache common stock on October 25, 2019.

Q. Are there any points you made about the movement in Apache's common stock price on October 25, 2019 that Ms. Allen failed to address in her Surreply Report?

A. Well, I've mentioned numerous times my October 25, 2019 intraday analysis of Apache's stock price movement, which I present in my Reply Report, including in paragraph 37. Ms. Allen's suggestion that investor concern over Suriname somehow explains the entirety of the statistically significant decline in the price of Apache common stock that day really called for an intraday examination. I performed that. I presented the results. She just ignores that analysis entirely which, to me, is a concession – especially considering the length of her Surreply Report – that she has no credible basis to disagree with the results or conclusions I draw from my intraday analysis.

Ms. Allen also has no response at all to the contemporaneous facts I referenced in my Reply Report, which further support that Keenan's resignation arose from Alpine High's poor performance, which is consistent with the news and analyst commentary issued on October 25, 2019, as well as, of course, Christmann's later public confirmation that "***Steve did not have anything to do with us getting into Suriname or taking this block***."

As I previously testified, consistent with Plaintiffs' allegations in this case, the close temporal proximity between the results of Project Neptune, available in mid-October 2019,

and Keenan's resignation less than two weeks later supports Plaintiffs' allegation that Keenan's sudden resignation was based upon Alpine High's poor performance. In my Reply Report, I referenced an internal Project Neptune document, dated October 14, 2019, which I understand called directly into question the Company's preceding public representations concerning Alpine High. So, while the factual record to date reflects that Mr. Keenan's resignation had nothing to do with Suriname, it strongly supports that his resignation was based upon Alpine High's poor results, which the internal Project Neptune document suggests may have been even worse than publicly represented. Ms. Allen has no response to this at all.

Q. Are you aware of any information, other than what you cite in your Reply Report and in your testimony thus far, that you believe refutes Ms. Allen's efforts to suggest that investor concern over Suriname caused the entirety of the statistically significant decline in the price of Apache common stock on October 25, 2019?

A. Yes. I understand that Defendants' document production in this case is ongoing, and, subsequent to my Reply Report and my November 8, 2023 deposition, I have seen certain [redacted]

Q. Dr. Nye, we've marked as **Exhibit 25**, [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted]

[redacted]

Q. Is there any other information that you have seen from discovery in this case that relates to Apache's common stock price movement on October 25, 2019?

A. [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted]

[redacted] [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

**F. <u>March 16, 2020</u>**

Q. Looking at Ms. Allen's Surreply Report, do you see that in paragraph 59 through paragraph 75 she addresses the opinions you expressed in your Reply Report pertaining to the March 16, 2020 alleged corrective disclosure?

A. Yes. I see that.

Q. Generally speaking, what opinions does Ms. Allen express in these paragraphs?

A. Ms. Allen simply repeats the opinions as to March 16, 2020 that she expressed in the Allen Report. So, she again claims that there was no new information about Apache or Alpine High revealed on March 16, 2020, makes what appears to be a legal argument that the Complaint did not adequately flag the March 16, 2020 Susquehanna analyst report as corrective, and claims that I misapplied the volatility adjustments I made to control for the volatility around March 16, 2020, which Ms. Allen previously opined was too severe to permit any reliable event study testing of Apache's stock price movement on March 16-17, 2020.

Q. In your opinion, does Ms. Allen provide evidence in the Surreply Report demonstrating that the alleged March 16, 2020 corrective disclosure had no price impact?

A. No. She does not.

Q. In the Surreply Report, does Ms. Allen identify any Apache-specific information that she claims caused the statistically significant price declines in Apache common stock on

March 16 and March 17, 2023?

A. No. Despite the two days of statistically significant declines in the price of Apache common stock on March 16-17, 2020, Ms. Allen does not offer an opinion as to what, if not the contents of the March 16, 2020 corrective disclosure, caused any portion of the Apache stock price declines on those days.

Q. In paragraph 60, Ms. Allen states, among other things, that "***the Complaint does not allege the Susquehanna report as corrective***," do you see that?

A. Yes. I see that.

Q. Do you agree with Ms. Allen's claim that Plaintiffs failed to allege that the Susquehanna report was a corrective disclosure in this case?

A. No, I do not. I based my analysis of Ms. Allen's claims about Apache's stock price movement on March 16-17, 2020 upon the Complaint's allegations, as I make clear in my Reply Report.

As I said there, the Susquehanna report is identified in paragraphs 315-16 of the Complaint, and those paragraphs are in the loss causation section of the Complaint. Ms. Allen seems to suggest that including the Susquehanna report in the Complaint's loss causation allegations was not sufficient for her to view the Susquehanna report as conveying corrective information to the market on March 16, 2020. Instead, she discusses her inability to locate references to the Susquehanna report in a different section of the Complaint. Ultimately, I don't think that's an issue for either expert here to decide, but I disagree with Ms. Allen and understand that including the Susquehanna report within the loss causation section along with every other alleged corrective disclosure underlying Plaintiffs' damages claim sufficiently flags that report as a source of corrective information on March 16, 2020.

Q. Dr. Nye, to aid in this discussion, we've introduced as **Exhibit 27** a copy of the

Complaint in this case, do you have that?

A. Yes. I do. Thank you.

Q. Could you please turn to paragraph 315 of the Complaint, and identify for me where you believe the Susquehanna report was identified as a corrective disclosure?

A. Sure. Paragraph 315 identifies the corrective information that Plaintiffs allege was released on March 16, 2020. As you can see, the paragraph begins with a discussion of the *Seeking Alpha* article and what it revealed. The last sentence of paragraph 315 states, "***[t]hat same day, Susquehanna Financial Group downgraded Apache shares, highlighting a lack of 'balance sheet flexibility' and noting Apache's*** "***net leverage exceeding 3.0x by the end of 2021***."

Q. In your opinion, what information did the Susquehanna report convey that relates to the alleged misstatements in this case?

A. As I testified at my deposition, consistent with the information that *Seeking Alpha* revealed that same day, the March 16, 2020 Susquehanna report disclosed that Apache was in a precarious financial position relative to its peers, which caused Susquehanna to downgrade Apache and to lower its price target for Apache common stock. Susquehanna also noted that Apache would likely face increased net debt going forward, and may have to make further financial cuts. This revealed, as Plaintiffs allege in paragraph 316 of the Complaint, that Alpine High had severely constrained Apache's financial condition relative to its peers.

As for how that new information relates to the alleged misstatements, it certainly relates to Defendants' repeated representations that Alpine High would drive shareholder value for years, including by generating "***free cash flow for decades to come***." As revealed on March 16, 2020, rather than drive shareholder value for years, the supposedly "***transformative***" Alpine High discovery had, in fact, rendered the Company's financial position to be the worst among all

independent E&P companies – a circumstance expected to magnify during the coming year – by limiting the Company's balance sheet flexibility and calling into question Apache's ability to continue as a going concern, in light of billions of dollars in capital investment, from which Apache generated little or no appreciable value. This revelation caused the Susquehanna analyst to downgrade Apache and significantly lower its price target for the Company from $35 to $9, an almost 75% reduction.

Q. Turning back to paragraph 61 of the Surreply Report, do you see where Ms. Allen states that, with respect to your Reply Report, "***Dr. Nye has no evidence refuting the Allen Report's analyses regarding Seeking Alpha***"?

A. Yes. I see it.

Q. Do you agree with Ms. Allen's point?

A. No, I don't agree. As I testified at my deposition in this case, the *Seeking Alpha* article did, in fact, reveal new information to the market on March 16, 2020, namely that Apache was in a far more precarious financial position than its peers, resulting primarily from Alpine High, meaning that Apache lacked balance sheet flexibility and the ability to borrow, which was critical to weathering market conditions present at that time.

Q. In paragraph 62 of the Surreply Report, Ms. Allen states: "***[i]nstead, Dr. Nye disingenuously now claims the Susquehanna analyst report issued on March 16, 2020, which downgraded Apache (along with other E&P companies), is the alleged corrective disclosure***," do you see that?

A. Yes. I see it.

Q. Is Ms. Allen correct that you have moved on from the March 16, 2020 *Seeking Alpha* article as a corrective disclosure in this matter?

A. No. As I testified earlier, I based my analyses concerning the March 16, 2020

corrective disclosure on the Complaint's loss causation allegations, which identify both *Seeking Alpha* and the Susquehanna March 16, 2020 analyst report.

Q. In paragraph 63 of the Surreply Report, Ms. Allen claims that the severe financial constraints that *Seeking Alpha* reported Apache faced relative to its peers are not addressed in the Susquehanna report, do you see that?

A. Yes. I see it.

Q. Do you agree with Ms. Allen on that point?

A. No, I do not. As reflected in the Susquehanna report, the analyst downgraded Apache based upon the Company's lack of "balance sheet flexibility" and excess "net leverage," which the Susquehanna report noted was a "main parameter" in the downgrade. These are the same constraints that *Seeking Alpha* addressed, and Ms. Allen cannot credibly distinguish between the two.

Q. In the same paragraph, Ms. Allen also notes that Susquehanna downgraded two other E&P companies in the same report, do you see that?

A. Yes. I see it.

Q. In your view, does Susquehanna's downgrade of two other companies along with Apache divorce the Susquehanna report from Plaintiffs' allegations that the March 16, 2020 corrective disclosure revealed, among other things, that Apache's financial position was severely constrained "***relative to its peers***"?

A. No, not at all. Apache's peer group is pretty sizeable – more than 22 companies according to Susquehanna – and it's not as though all of Apache's E&P competitors were downgraded at this time. So, Susquehanna's decision to also downgrade two of Apache's competitors does not alter the fact that Apache remained severely financially constrained relative to its peers.

Q. Also in paragraph 63, Ms. Allen claims that "***the reason for the downgrade of all three companies is exactly the same – the 'large uncertainty in the magnitude and timing of a recovery in oil prices***,'" do you see that?

A. Yes. I do.

Q. Based upon your review of the Susquehanna report, is Ms. Allen correct that oil price uncertainty was the reason that Susquehanna downgraded Apache and the two other E&P companies referenced in the report?

A. No. She's wrong. You need only look at the portion of the Susquehanna report that Ms. Allen cut and pasted into paragraph 63 of her Surreply Report to see that Susquehanna explicitly states that, in light of prevailing oil price uncertainty, it is downgrading Apache and two other companies, with the "***main parameter***" being "***balance sheet flexibility***." In that same excerpted language, the Susquehanna analyst notes that Apache's and the other two companies' excess net leverage factored into the downgrade. If, as Ms. Allen suggests, oil price uncertainty was "***the reason for the downgrade of all three companies***," then Susquehanna likely would have downgraded a greater number of E&P companies at this time, as each faced the same price uncertainty to which Ms. Allen points.

Q. In the first sentence of paragraph 66 of the Surreply Report, Ms. Allen denies that she has failed to identify any other information disclosed on March 16, 2020 that could explain the statistically significant declines in the price of Apache common stock on March 16 and March 17, 2020, do you see that?

A. Yes. I see that.

Q. In your opinion, does she show any such information in the Surreply Report?

A. No. I say this because, looking at paragraph 66 of her Surreply, she does not identify any other information that could explain Apache's stock price movement on March 16-

17, 2020. Instead, she just turns around and says that I'm the one who has failed to identify any new information concerning Apache and Alpine High that was disclosed on March 16, 2020.

But, I did identify the new information revealed on March 16, 2020 concerning Apache and Alpine High, including in paragraphs 44-45 and 47 of my Reply Report. That's the same information that I just identified in my testimony today. The question for Ms. Allen was, if it was not the alleged corrective information that impacted Apache's stock price on March 16-17, 2020, then what was it? That question is critical because, to my understanding, one claiming that the price decline following a corrective disclosure is not evidence of price impact from alleged misstatements must explain what, in their view, actually caused the security price to change on that corrective disclosure date. Ms. Allen still has not done that, despite conceding that Apache's common stock traded in an efficient market during the Class Period. Instead, her position appears to be that she can point to the volatility present in the market at this time to avoid engaging on the issue.

Q. Moving ahead to paragraph 69, do you see that Ms. Allen claims that the event study model you applied in your Reply Report to control for market volatility around the March 16, 2020 corrective disclosure failed to "***fully account[] for the record-high market volatility***" on that day?

A. Yes. I see that.

Q. Do you have a response to that criticism?

A. Sure. I completely disagree. To account for the market volatility that Ms. Allen initially suggested would make any event study unreliable, I consulted academic literature prepared by Ms. Allen's colleagues at NERA, which advises, among other things, that "***[t]he simplest way to resolve the issues associated with performing an event study over a period of heightened volatility would be to use the disclosure period as the estimation period. One can***

***'overlap' the estimation and the disclosure period, by construction guaranteeing similar volatilities between the two periods***."

As a result, in my Reply Report, I modified the estimation period, as the NERA authors suggest, to overlap with the heightened market volatility due to the Covid pandemic during March 2020. Upon implementing that control for the market volatility that Ms. Allen claims prevents any reliable statistical testing, I note that the two-day Company-specific return on March 16 and 17, 2020 remains statistically significant at above the 95% confidence level. This is true regardless of whether one uses the market and industry indices used in the Nye Report, or the market and industry indices employed by Ms. Allen in the Allen Report. It is also true across a range of control period lengths, as reflected in the table I include in paragraph 59 of my Reply Report.

Q. In paragraph 69 of the Surreply Report, Ms. Allen states that if you had applied any one of the other three methods for controlling volatility set forth in the NERA paper upon which you based your March 16 event study, you would have concluded that "***there was no statistically significant price reaction after the March 16, 2020 alleged corrective disclosure***," do you see that?

A. Yes. I see that.

Q. If you turn ahead to paragraph 74, Ms. Allen similarly states that the other three methods for controlling volatility set forth in the NERA paper would have been more appropriate to apply, and that "***[a]pplying any of these three other methods results in no statistically significant price reaction following the March 16, 2020 alleged corrective disclosure***," do you see that as well?

A. Indeed.

Q. Dr. Nye, I've marked as **Exhibit 28** a copy of what I believe to be the NERA

paper you just referenced in your prior answer, do you have that?

A. Yes, I have it. And, yes, this is the NERA paper I was referring to.

Q. Okay, then, with that in mind, can you explain why your chose the method that you selected to control volatility for March 16, 2020?

A. Yes, gladly. So, of the alternative methods of controlling for volatility identified in this NERA paper, I selected the first one identified, which is to move the estimation window, or "control period," forward to the event window, as discussed at the top of page 4 on **Exhibit 28**. I chose this "solution," as NERA calls it, because finding a control period to estimate your model is a key component of standard regression analysis, with the goal being to select a control period that is representative of the period that you are examining. This approach is peer-reviewed, robust, scientific, reliable, and is the product of decades of research and analysis regarding the proper implementation of event studies in the field of financial economics. It is well known that a regression model will reflect the volatility dynamics present during the control period used to estimate the model. Indeed, according to the NERA authors, "***[o]ne can 'overlap' the estimation and the disclosure period, by construction guaranteeing similar volatilities between the two periods***." Finally, I note that in the Allen Report, Ms. Allen did not apply any of these approaches, even though it is her burden to prove a lack of price impact.

Q. Can you explain why you elected not to apply any of the other methods that Ms. Allen references?

A. Yes. First, the NERA paper only describes two other methods for modelling specific periods of heightened volatility: the direct use of option-implied volatility on a specific disclosure date; and the use of predicted volatility based on the estimated historical relationship between a company's option-implied volatility and the implied volatility of the market index. The GARCH model Ms. Allen refers to as a third method is simply a variant of the predicted

volatility approach that the authors suggest as an alternative if the primary predictive model provides nonsensical results, which the authors note is a distinct possibility. Furthermore, the other two methods discussed in the NERA paper are simply *ad hoc* proposals of how to account for increased market volatility in an event study context that have not been peer-reviewed or subject to any academic scrutiny. Indeed, these methods replace the well-known "best linear unbiased estimates" produced from the time-tested ordinary least squares regression model with the implied volatility estimated from the price of stock options on a single day. Yet, Ms. Allen has performed no analysis whatsoever to support the notion that the option market prices upon which she relies were efficient on March 16, 2020, such that they accurately reflect the Company-specific volatility of Apache's stock price that day. Moreover, unlike the standard regression model approach, which is based on months of data analyzed using scientifically reliable methods and principles, the other two proposals described in the NERA paper use a dataset consisting of one observation, and are therefore subject to a much greater degree of estimation error.

Q. With respect to the other methods for controlling volatility that Ms. Allen references, does she set forth the results of applying those methods anywhere in the Surreply Report?

A. No. Ms. Allen's Surreply Report is conspicuously silent about the actual results of these alternative methods.

Q. Have you subsequently come to learn what those results are?

A. Yes, I have. I actually testified about this at my November 8, 2023 deposition in this case. According to Ms. Allen's backup materials produced to Plaintiffs' counsel, the Company-specific price decline on March 16, 2020 is statistically significant at above the 90% confidence level, and the two-day Company-specific price decline on March 16-17, 2020 is

statistically significant at above the 95% confidence level, when using either my regression model or Ms. Allen's alternative regression model, regardless of which of the other two implied volatility methods described in the NERA paper are used to account for Apache's Company-specific volatility on March 16, 2020.

Q. Turning back to paragraph 73 of the Surreply Report, Ms. Allen contends that you misapplied the volatility control method that you selected by using five alternative control periods that are not adequately representative of the market volatility on March 16, 2020, do you see that?

A. Yes. I see that.

Q. Do you dispute Ms. Allen's criticism?

A. Yes, of course. I believe she makes this claim in an effort to support her contention that the other methods identified in the NERA paper would better control for the volatility present on and around the March 16, 2020 corrective disclosures. I have already testified as to why those other methods are unreliable.

As to her criticism of the specific control periods that I selected in the NERA-suggested and peer-reviewed approach that I applied, Ms. Allen simply ignores the statement of her colleagues that "'***overlap[ping]' the estimation and the disclosure period, by construction guarantee[s] similar volatilities between the two periods***." In my Reply Report, I have accounted for that volatility, and have demonstrated, under a number of different control periods, that the decline in the price of Apache common stock is still statistically significant at or above the 95% confidence level relative to its E&P peers facing the same market conditions. No amount of statistical chicanery can escape the fact that, net of market and industry effects, Apache common stock suffered an economically significant price decline of approximately 30% on March 16-17, 2020, and Ms. Allen can point to nothing other than the alleged corrective

disclosures as the cause of that decline.

Q. At the end of paragraph 73 of the Surreply Report, Ms. Allen includes a table, do you see that?

A. Yes. I see that.

Q. What does this table show?

A. So, in this table, Ms. Allen presents results to try to support her contention that the volatility in the control periods that I applied when running a volatility-adjusted event study for March 16-17, 2020 was not representative of the volatility actually present on March 16, 2020.

Q. Do you have a response to the table?

A. Yes. First, the 83% volatility that she includes in each instance for March 16, 2020, reflects an annualized measure of the implied volatility of the S&P 500 Index on that day. So, it is an estimate, based in part on the market prices of call and put options, of the volatility associated with changes in the S&P 500 Index over the course of the following one-year period. It does not reflect the volatility of Apache common stock over that one-year period, much less the Apache-specific volatility, net of market and industry effects, over the March 16-17, 2020 two-day event window of interest. Thus, this table really says nothing at all about my regression model's ability to control for Apache-specific volatility.

**G. <u>Ms. Allen's "Big Picture Analysis"</u>**

Q. Dr. Nye, do you see that in paragraphs 76-78 of the Surreply Report, Ms. Allen addresses the response to her "Big Picture Analysis" that you set forth in your Reply Report?

A. Yes, I see that.

Q. Do you have a response to the points that Ms. Allen makes in these paragraphs of the Surreply Report concerning her "Big Picture Analysis"?

A. Well, I think I've already repeatedly stated that I really assign little value to Ms.

Allen's so-called "Big Picture Analysis," primarily because she bases it upon a far too narrow view of Plaintiffs' allegations. Remember, Ms. Allen views this case as essentially alleging nothing more than that Defendants misstated the relative oil and gas volumes at Alpine High. I think I've already made clear that Ms. Allen's "Big Picture Analysis" overlooks numerous alleged misstatements about Alpine High that do not relate to the oil/gas mix that Ms. Allen mistakenly views as the sum and substance of the alleged misstatements here.

Among the misstatements about Alpine High that Ms. Allen overlooks are Defendants' repeated representations that Alpine High was a "***world class resource play***" and a "***transformational discovery***" that would "***deliver significant value for our shareholders for many years***" and "***drive incremental growth and returns for years to come***." Ms. Allen's narrow view of Plaintiffs' allegations also causes her, despite her claims to the contrary, to inadequately consider Defendants' claims that Alpine High would perform well economically "***even if oil or gas prices fell substantially***," including Defendant Christmann's September 7, 2016 statement that Alpine High was a "***very wet gas resource***" in which Apache would "***virtually get the [dry] gas for free***." Ms. Allen's view of this case also causes her to inadequately consider that, the day before her Focus Period begins, Defendants reiterated a number of the Alpine High misstatements, including the claims that "***at Alpine High, we are building out a world-class resource play that will change the course of Apache***" and that Alpine High would "***drive capital investment, and very soon, free cash flow for decades to come***." Also on February 22, 2018, Defendants claimed that Alpine High "***is going to really hum below $2 on the gas side***" and that "***[w]e would not be making this type of investment on the midstream or the upstream side if we thought there was a sensitivity that was close to anything that would come into not making it work under very, very low gas and NGL and oil prices***."

So, against that backdrop, I just don't see any validity to Ms. Allen's "Big Picture Analysis," and I believe I covered all of my other criticisms in depth when discussing my views on the "Big Picture Analysis" in the context of paragraphs 56 and 57 of my Reply Report.

Ms. Allen also purports, in paragraph 77 of the Surreply Report, to address the internal Apache document entitled "***5 Year Lookback on APA Performance With Primary Focus on Alpine High***," which you marked as **Exhibit 10** earlier today. In particular, she takes issue with the price movement graph from that document that I included in paragraph 59 of my Reply Report.

Looking at the graph, you can see how Apache's stock price underperformed that of its peer group during Ms. Allen's Focus Period, which is the time period during which Ms. Allen contends that Apache's stock price movement can be explained entirely by changes affecting the E&P industry as a whole. Her position is incorrect, and is also inconsistent with the Company's own analysis. Nothing she says in the Surreply changes that.